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THE

BIRDS OF INDIA:

BEING

A NATURAL HISTORY

OF ALL

THE BIRDS KNOWN TO INHABIT CONTINENTAL INDIA;

WITH

Descriptions of the Species, Genera, Families, Tribes, and Orders, and a Brief Notice of such Families as are not found in India,

MAKING IT A

MANUAL OF ORNITHOLOGY

SPECIALLY ADAPTED FOR INDIA,

BY

39891

T. C. JERDON,

SURGEON MAJOR, MADRAS ARMY,

Author of "Illustrations of Indian Ornithology."

In Three Volumes.

VOL. III.

Calcutta:

GEORGE WYMAN AND CO., PUBLISHERS,

1A, HARE STREET, CALCUTTA.

1864.

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NATIVE LANGUAGES—ABBREVIATIONS.

B., Beng.	Bengalee.	
Bhot.	Bhotia.	*(Sikim).*
Can.	Canarese.	
H., Hind.	Hindustani.	
Lepch.	Lepcha.	*(Sikim).*
Mahr.	Mahratta.	
Mal.	Malyalum.	
Sind.	Sindhi.	
Tam.	Tamul.	
Tel.	Telugu or Telinga.	

Besides these, a very few names are given from the language of the Gonds of Central India; the Mharis, an allied race; and the Yerklees, a nomade race in the Deccan.

PREFACE

TO THE

SECOND PART OF SECOND VOLUME.

The author has at last the gratification of concluding his 'BIRDS of INDIA,' the compilation of which has occupied him incessantly for upwards of two years. The second part of this Volume has been delayed by the illness of the author, as well as by other causes beyond his control; and he is rejoiced to find, by the impatience of many of his correspondents and others, that the study of Ornithology is on the increase, and that the utility of the present work is already apparent. The number of species recorded is above one thousand, about double that of the Avi-fauna of Europe. The author mentions this to show that he has not been unnecessarily long over his task, about two years and one month; and that those who expected more were somewhat unreasonable in their views. Indeed, had he not been working under Government, and against time as it were, he certainly would have taken more time over the work, and the imperfections would have been fewer. None can be better aware than the author himself of the numerous imperfections and blemishes throughout the work, some of which have been kindly brought to his notice, and all of which he hopes to correct if a second edition be called for; and with this view, the author most earnestly begs for information from all interested

in the study of Ornithology, both with regard to any inaccuracies of the present work, and especially additional information on the habits, changes of plumage, &c., &c., of such birds as are least known. He is happy to be able to state that several gentlemen interested in the study of Indian Birds, some of them previously unknown personally to him, have commenced a correspondence, and given him some valuable notes on various species. They are too numerous to enumerate here, but he cannot refrain from mentioning Dr. D. Scott, now at Umballa; Mr. F. Simson, B. C. S.; Mr. Jos. Shillingford of Kolassee; and Mr. Brooks, Railway Engineer, Mirzapore. He much regrets that the length to which the second volume has extended, has prevented his adding a description of the Assamese and Burmese birds not included in the Birds of India; and the same reason has rendered it unadvisable to give that extended table of the geographical distribution of all the species which he proposed in the introduction to the first volume.

It is with no ordinary feelings of regret, that the author has to record here the death of the nobleman to whom this work was dedicated. Thus, two Viceroys, under whose patronage this book has been planned and carried out, have, in the short space of two years, gone to their long home. Lord Canning, to whom, he may say, this contribution to science owes its existence, ever took a lively interest in its progress, and brought it prominently before Lord Elgin, who warmly seconded his predecessor's views; and the author is glad to see that this liberality has been duly appreciated by the scientific world. He trusts that the next Viceroy will see fit to continue the patronage of Government, to

enable the author to go on with the rest of his projected manuals. The volumes on Mammals and fishes are both nearly ready for the press, and if the author's special duty is continued, will be commenced immediately, and finished, he hopes, by the end of 1864.

December 1863.

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THE BIRDS OF INDIA.

VOL. II. PART II.

ORD. GEMITORES, PIGEONS.

Syn. *Columbæ*, Latham.

Bill moderate or short, straight, compressed; the basal portion weak, and covered with a soft fleshy skin or membrane, in which the nostrils are situated; the apical portion arched or vaulted, and more or less curved down at the tip; wings generally long, pointed; tail variable, usually of twelve or fourteen feathers; tarsi short and stout; legs feathered to the joint; toes moderately long; hind toe on the same plane as the anterior ones.

There is no order of birds, perhaps, better marked than that of the Pigeons and Doves, and such is the marked physiognomy of these birds, that it does not require an Ornithologist to refer a bird of this order to its proper place; not more than one species at present existing, which could excite more than a momentary doubt in the mind of any one as to its real affinities.

The soft and often tumid and bulged base of the bill is smooth in some, scurfy in others, and the nostrils are usually pierced well in front; the apical portion of the bill varies much, slender and slightly curved in some, thick and much curved in others. The gape is tolerably wide, very wide in one family, and the face and lores are usually well plumed. The eyes are set rather far back, and give a peculiar physiognomy to the birds of this order. The wings are generally long, and more or less pointed; in some of the ground Pigeons, only, shorter and more rounded; and, in many, the first primary quills are notched on their inner webs, as in the *Falconidæ*. The tail varies both in length and form, but is usually nearly even, or very slightly rounded, wedge-shaped in a few. It consists of twelve or fourteen feathers in most; of sixteen in a few; and it has been stated that there are only ten in one or two. The

tarsus is short and stout, but varies in the different families, and is more or less feathered in a few; the bare portion is covered with scutellæ in front. The feet are more or less elongated, the membrane of the toes sometimes bordering the scutellæ, and the soles are broad and flattened in one family. In a few of the arboreal Pigeons, the outer toe is slightly joined at the base to the middle one; but, in general, the toes are divided to the base.

In their internal anatomy, too, the Pigeons are well marked. The bony sternum is narrow, and has two notches on each side; the outermost one deep, whilst the inner one is often reduced to a foramen; the ridge is deep, and rounded off anteriorly, somewhat as in Parrots; and the furcula is flat, and destitute of any appendage. The crop is very large and double, and, in the breeding season, becomes glandular in both sexes, and secretes a milky fluid, which moistens the grains which they afterwards convey to their young. The gizzard is very muscular, the intestines long and slender, with minute cœca, and there is no gall bladder. The lower larynx is furnished with two pairs of muscles. Their feathers want the supplementary plume present in most *Rasores;* and, in many, the feathers on the back and rump have the shaft wide and flattened, especially at its basal portion, giving a sort of spinous character to the touch.

All Pigeons are monogamous in their habits, and both sexes assist in making the nest, incubating the eggs, and feeding the young. They make loosely-constructed nests of twigs, not interwoven, either on trees, or in holes of rocks or buildings, and never lay more than two eggs; in some genera only one, and their colour is always pure white. The young are born naked and blind; they take considerable time to reach maturity, and, long after they fly are fed by their parents, which disgorge the grain, &c. from their own craws. Pigeons feed on fruit and grain, never touching insect food, though a few eat small snails; and they alone, of all birds, drink by a continued draught. Their note is usually soft and expressive, being, in most, a sort of *Coo*, or low plaintive moan, in one group a rolling whistle.

Pigeons are found over all the world, but are most numerous in Australia and the Oceanic region. There are many in America,

but not of very varied forms; few in Europe and temperate Asia; and moderately abundant in India, increasing in the Malayan region both in types and numbers. Above 300 species are now known, all of very pleasing coloration, some of them very beautiful, and many adorned with bright metallic hues, and a rich changeable gloss. Most of them are highly fitted as food for man, and many are excellent eating.

Pigeons may be said to be intermediate to *Rasores* and *Insessores*, and Cuvier considered that they form the passage from one tribe to the other. Some Ornithologists place them as an aberrant family of the *Rasores;* others as the last of the *Insessores.* They approximate the *Rasores* by their vaulted beak, their large nasal fossæ, covered by a soft membrane, their crop dilatable externally, the form of their tarsus and foot, and their blunt nails, their massive form, and general physiognomy, and by their affording excellent food; whilst they hold to the *Insessores* by their monogamous habits, the young being hatched blind and helpless, the hind toe being on a level with the other three, and the short tarsus never being spurred. In their internal anatomy, too, they equally partake of both, having the thick gizzard of the *Rasores* and the small cœca and simple gastric glands of the *Insessores.* On the whole, I consider, with Wallace and others, that they approach the *Rasores* more nearly than they do the *Insessores.*

As stated in my Introduction, theoretically, I am inclined to regard them as an aberrant division of the *Rasores.* They are certainly hardly co-equal in value with the other five orders of birds, and one argument might be drawn in favor of their being rather a family than a tribe, from the fact of their presenting so great an uniformity of structure throughout, the other orders exhibiting a constant variation of type; but, for convenience of definition and practical purposes, I think it advisable to keep them distinct as Gray, Bonaparte, and Blyth have done.

The family of the *Insessores* to which, perhaps, they make the nearest approach, is that of the Cuckoos, and the most nearly related among the *Rasores* are the *Cracidæ,* which agree with them in the structure of their feet, and the *Tinamidæ,* both American groups.

I have selected MacGillivray's name for the order; its termination being conformable with that of the other orders.

Pigeons may be divided into the following families:— 1. *Treronidæ*, fruit eating or Tree Pigeons; 2. *Columbidæ*, ordinary Pigeons and Doves, feeding partly on the ground and partly on trees; 3. *Gouridæ*, or ground Pigeons; and 4. *Didunculidæ*, consisting of a single form, to which perhaps ought to be added the *Dididæ*, founded for the extinct Dodo. Gray divides them, as I have done here, but, making the whole order of one family only, *Columbidæ*, our families are by him arranged as sub-families.

Bonaparte adds another, *Calœnidæ*, separated from *Gouridæ*, and founded on the Nicobar Ground-pigeon; and latterly, he restricted *Gouridæ* to the gigantic Crowned Pigeons of New Guinea.

Fam. TRERONIDÆ.

Bill varied, short and thick in some, slender in others, the tip strong and vaulted; wings long, firm; the tail short or moderate in most, always of fourteen feathers; tarsus short, more or less feathered, the bare portion reticulated; inner toe a little shorter than the outer, which is slightly united at the base to the middle toe; claws short, well curved.

The Fruit-pigeons vary greatly in size, some of them being very large, others minute; and they also differ much in the strength of the bill. The wings of all are strong and firm, and their flight vigorous and rapid. The tail is broad, and, in almost all, consisting of fourteen feathers. They are exclusively frugivorous, and are found chiefly in India, including Malayana and Australia (with Oceanica), a very few occurring in Africa. They may be subdivided into the following sub-families:—

1*st.*—*Treroninæ*, Green Pigeons.

2*nd.*—*Carpophaginæ*, Imperial Pigeons.

3*rd.*—*Ptilopodinæ*, Green Doves.

Sub-fam. TRERONINÆ, Green Pigeons.

Bill stronger and thicker than in the two other sub-families; tail typically short; tarsi and feet stout, soft, with very broad soles.

The Green Pigeons are a well marked division, all having a marked physiognomy by which they can be recognised at a glance. They are of tolerably stout and massive form, and of a dull leaf-green colour, more or less varied with ashy and maronne above, with yellow on the wings, and with orange or buff beneath. The eyes of most are very beautiful, being blue with a red outer circle.

They are more or less gregarious according to the species. When hunting for fruit, they are continually gliding about the branches, like squirrels; and, from their strong feet, they can hang over to seize a fruit, and recover their position at once by the strong muscles of their legs. When perfectly quiet, they are very difficult to observe, from the similarity of their tints to that of leaves. They nidificate on trees, making a loose nest of twigs, and laying two white eggs. A few are found in Africa and Madagascar, but the majority are denizens of India and Malayana, not extending as far as Australia, but one species, at least, occurring as high north as Japan, although they appear to be rare in China. They all afford excellent eating, but the skin is very tough and thick, and ought to be removed.

Several divisions have been of late formed among the Green Pigeons, which were all formerly included under *Vinago*, Cuvier, *Treron* of Vieillot.

Gen. TRERON, Vieillot (as now restricted.)

Syn. *Toria*, Hodgson—postea *Nomeris*.

Char.—Bill very strong and deep; eyes surrounded by a nude space.

This genus, as at present limited, of which we have only one species in India, and that a doubtful member, is distinguished from all the others by its very strong bill, the horny portion of which is continued back to beyond the feathers of the forehead.

771. **Treron Nipalensis**, HODGSON.

Toria, apud HODGSON, As. Res. XIX. 164—BLYTH, Cat. 1381 (in part)—*Thoria* (*i. e.*, *quasi* rostrata), of the Nipalese.

THE THICK-BILLED GREEN PIGEON.

Descr.—Male, crown ashy, paler on the forehead; rest of the plumage bright green, with the mantle and upper part of the wings of a deep and bright maronne; wing primaries and their larger coverts black; the other coverts margined with bright yellow, forming two and a half bands, the last bordering the green tertiaries; middle tail feathers green, the rest with a blackish medial band, and broad grey tips; beneath yellowish green, with a faint tinge of fulvous on the breast; under tail-coverts cinnamon colored.

The female differs in wanting the ashy head and maronne mantle of the male, in the lower tail-coverts being subdued white, barred with green, and the upper tail-coverts are tinged yellowish.

Bill glaucous green, with the soft portion at the sides of the upper mandible vermillion, forming a large and conspicuous spot. Legs bright vermillion; irides deep red-brown, with a blue inner circle; naked orbital skin livid blue. Length 10½ inches; extent 17; wing 5¾; tail 4.

This species of Green Pigeon differs from all the other Indian ones by its extremely strong bill. If the other species of *Treron* do not, as stated, possess the third primary deeply sinuated on its inner web, it ought perhaps to be separated under Hodgson's generic name *Toria;* or it might be joined to *Osmotreron*, as an aberrant species, or placed under *Butreron.*

It has been found in the Himalayas, though apparently not very common, and extends rarely into Lower Bengal, and to some of the countries to the eastward.

The other recorded species of *Treron* are *T. psittacea,* Temm.; *T. curvirostra,* Gmelin; and *T. aromatica,* Gmel., all from Malayana; and *T. axillaris,* Gray, whose exact locality is unknown. *T. capellii,* Temm., has been separated by Bonaparte as *Butreron.* Its bill is almost vulturine in aspect, and the tail is rounded; but in its nude orbits and thick corneous bill, the preceding species accords sufficiently with it.

Gen. CROCOPUS, Bonap.

Char.—Bill tolerably short and stout, with the soft basal portion occupying about half the length of the bill; the

inner web of the third primary distinctly sinuated; feet yellow.

This group differs from the other Indian ones by its larger size, more massive form, yellow feet, and the sexes very closely resemble each other. There are two nearly allied races in India, and a third in Burmah.

772. Crocopus Phœnicopterus, Latham.

Columba, apud Latham—C. militaris, Temminck—C. Hardwickii, Gray—Gould, Cent. Him. Birds, pl. 58—Blyth, Cat. 1384—*Hurrial*, H.—*Hurril* of some.

The Bengal Green Pigeon.

Descr.—Top of the head, and the sides of the base of the neck, (forming a demi-collar) ash-grey, contrasting with the yellow green of the back of the neck; a green tinge on the forehead; the rest of the plumage green; shoulders of the wing lilac in the male, and with a trace of the same in the female; the greater coverts margined with pale yellow, forming an oblique bar across the wing; the terminal two-fifths of the tail ash-grey above, deeply tinged with green, albescent beneath, with the medial portion blackish; beneath, the neck and breast are bright yellow-green, with a shade of fulvous, and the abdominal region ash-grey; the lower belly generally more or less mixed with green, but bright yellow in the middle, as are the tibial feathers; vent mingled white and green; under tail-coverts dull vinous maronne, with white tips, inclining to greenish in the female.

Bill whitish; feet deep yellow; irides carmine, with an outer circle of smalt blue. Length 12½ inches; extent 22; wing 7½; tail 5; bill at front $\frac{13}{16}$.

This Green Pigeon is found over all Bengal and Upper India, as far as the Dehra Doon, and extending eastward into Assam, Sylhet, and Tippera. It extends south as far as the Nerbudda, and I have killed it at Saugor, but there the next species is perhaps equally common. Tickell found it all through Chota

Nagpore. He states that it breeds in the thick damp forests to the southward, towards Sumbulpore, during the rains. Many breed in various parts of Lower Bengal; and, as Blyth remarks, in the hot weather, not during the rains. No exact localities have been pointed out as its breeding places there, but it probably leaves the more cultivated ground at this time, and betakes itself to the wilder and less frequented jungles, very probably nestling in the Sunderbuns. Blyth states that 'the young are brought to Calcutta for sale, as well as adults caught with bird-lime, and that they soon become reconciled to captivity, and will utter their musical notes freely in the cage; but are gluttonous and uninteresting birds in confinement, especially when fed on plantains, which they take to most readily, besmearing the feathers of the head and neck, to the great injury of their beauty; it is therefore desirable to get them, by degrees, to feed on soaked gram.'

773. **Crocopus Chlorigaster,** Blyth.

Treron, apud Blyth, J. A. S. XII. 167—Blyth, Cat. 1385—T. Jerdoni, Strickland—V. militaris, apud Jerdon, Cat. 286—*Hurrial*, H.—*Pacha guwa*, Tel.—*Pacha pora* Tam.

The Southern Green Pigeon.

Descr.—This species differs from the last in having the whole top of the head ashy, devoid, in adults, of the slightest tinge of green on the forehead, and the whole under parts are green; the neck and breast, too, are less tinged with yellow, and shade gradually into the green of the abdomen; there is no trace of green upon the tail, except at its extreme base, which is uniformly ashy above.

Size of the last.—Wing barely 7 inches; tail 4¾.

This species replaces the last throughout the greater part of the Peninsula of India, and Ceylon, but is rare north of the Nerbudda, though occasionally killed even in Lower Bengal. Its habits are of course very similar. It is very abundant in many parts of Southern India, especially along the fine avenues of trees met with in parts of Mysore and the Carnatic. I found it breeding in April and May in the jungly country south-east of

Chanda. It comes in large parties, generally about 9 A. M., to certain spots on river banks to drink, and after taking a draught of water, occasionally walks a few steps on the damp sand, appearing to pick up small pebbles, pieces of gravel or sand. Their call is very similar to that of the Bengal Green Pigeon.

C. viridifrons Bl., of Pegu and Tenasserim, is another nearly affined race of *Crocopus*, chiefly differing from *C. phœnicopterus*, which it very closely resembles, by its conspicuous green forehead, and the basal half of the tail being bright greenish-yellow. I procured it near Thyetmyo, and also recently in Upper Cachar. Blyth remarks that it is not improbably the species of *Crocopus* which is stated to inhabit China.

Gen. OSMOTRERON, Bonap.

Bill as in *Crocopus*, but more slender; legs always red; sexes differ conspicuously in plumage; of small size.

This division, adopted by Mr. Blyth, differs technically but little from the preceding one, but forms a very natural group, containing several very nearly related species from India and Malayana; and which, as Mr. Blyth remarks, hold the same relationship to the large *Hurrials*, as Doves do to Pigeons in ordinary parlance.

There are two types of coloration, the one without any maronne colour on the back, the other colored much as in *Treron*.

774. **Osmotreron bicincta**, JERDON.

Vinago, apud JERDON, Cat. 289—Ill. Ind. Orn. pl. 31—V. unicolor, JERDON, Cat. 289 bis (the female)—BLYTH, Cat. 1386—V. vernans, var. LESSON—*Chota hurrial*, H. and Beng.—sometimes *Koklah*—*Chitta putsa guwa*, Tel.

THE ORANGE-BREASTED GREEN PIGEON.

Descr.—Male, above green, brighter and more yellow on the forehead, with the usual yellow wing-band; occipital region and nape ash grey; tail grey, with a blackish medial band on all but its middle feathers; beneath green, yellowish on the throat, and with a large buff-orange patch on the breast, surmounted by a

narrow lilac band somewhat broader on the sides; vent pale yellow; under tail-coverts cinnamon colored, and the lower surface of the tail blackish, tipped with greyish white.

The female differs in wanting the blue and orange breast, in the whole lower surface being brighter green, and in the lower tail-coverts being mingled reddish ashy and buffy white.

Bill greenish glaucous; legs pinkish red; irides red, surrounded by a blue circle. Length about 11 inches; extent 19½; wing 6, or rather more; tail 3¾; bill at front nearly ¾.

This very beautiful Green Pigeon is spread throughout the greater part of India and Ceylon, extending into Assam, and Burmah, as low as Tenasserim, but not recorded from the N. W. Provinces. I have seen it most abundant not far from the coast, both on the East and West of India, but it is not rare in Lower Bengal, though more common in Assam, Cachar, and the countries to the Eastward. It is generally in very numerous flocks, fifty and sixty or more, and flies with great rapidity. Layard found it breeding in Ceylon in May. The voice of the male is something like that of *Crocopus phœnicopterus*, but softer and more hurried. Blyth states that the young are often brought to the Calcutta market about June; that it has a less musical and less prolonged note than the *Hurrial*, but equally melodious.

The nearly allied species *O. vernans*, is found in the Malayan peninsula and islands, extending to New Guinea. It differs in being smaller, in the lilac band being of much greater extent, and in other points.

The next three species are very closely allied.

775. Osmotreron malabarica, Jerdon.

Ill. Ind. Ornith., letter press to pl. 31—Vinago aromatica, Jerdon, Cat. 287 (in part), and V. affinis, Cat. 288 (the female) —Blyth, Cat. 1389 (in part)—*Poda putsa guwa*, Tel.

The Grey-fronted Green Pigeon.

Descr.—Male, forehead pale ashy, or whitish-grey; mantle and wing-coverts maronne; the rest of the upper parts, with the lores,

eye-brow, face, and ear-coverts, green; wing-coverts broadly edged with bright yellow, and wing-feathers more or less edged with the same; tail green at the base, broadly tipped with ashy-white, and with a medial dark band, and the outermost feathers more or less marked with deep ashy on the inner webs; beneath green, yellowish on the throat and neck, and mixed with pale yellow on the vent and thigh-coverts; under tail-coverts cinnamon.

The female differs in wanting the maronne colour, and in the under tail-coverts being mingled greenish, ashy, and white.

Bill glaucous green; legs pinky-red; irides red, with an outer circle of blue. Length about 10½ inches; extent 18; wing 5¾; tail 4.

This species very closely resembles *Treron nipalensis* in coloration, but is at once distinguished by the very different and more slender bill, and it has no nude space round the eyes. It is found in most of the lofty forests of India, most abundant in Malabar, but I have killed it in Central India, and in the Eastern Ghats. It has the usual habits of the family, but does not, in general, associate in such large flocks as the last.

776. Osmotreron Phayrei, Blyth.

J. A. S. XXXI., p. 344—Treron malabaricus, apud Blyth, Cat. 1389 (in part)—V. aromatica, apud Selby, Jard. Nat. Libr. Pigeons, p. 97.

The Ashy-headed Green Pigeon.

Descr.—Very similar to the preceding, *O. malabarica*, but distinguished by having the entire cap ash-colored in both sexes, and by the male having a large ochreous patch on the breast.

This species, formerly confounded with *O. malabaricus*, appears to represent it in Lower Bengal, where, however, rare, but it is abundant in Assam, Sylhet, and Burmah.

The next species differs from the two preceding ones in both sexes having the under tail-coverts colored as in the females only of the others, and, in this respect, resembles *O. chloroptera*, Blyth, of the Andamans and Nicobars.

777. Osmotreron flavo-gularis, Blyth.

J. A. S. XXVI., 225.—T. malabarica, var, pompadoura, apud Layard—V. aromatica, var, Jerdon, Cat. 287 (in part).

The Yellow-fronted Green Pigeon.

Descr.—Very similar to *O. malabarica*, but appears to have constantly a yellowish forehead, a pure yellow throat, no buff patch on the breast, and the under tail-coverts are green in both sexes, with broad whitish tips. Dimensions of *malabarica*.

This nearly allied species was discriminated by Blyth from Ceylon specimens, whence sent by Layard, who procured it in the Mountain zone at the top of the Balcadna Pass, and at Ratnapura. I had long previously noticed it from the South of India as a variety of *Malabarica*, but am not aware what particular localities it affects.

O. pompadoura, Gmelin, from Ceylon, figured in Brown's Zoology, is another small species allied to the preceding; and *O. olax*, Temm., still smaller, appears to represent them in Malayana; whilst *O. fulvicollis*, Wagler, also from Malayana, Borneo, &c., differs from all by having the head and neck chesnut.

The next form differs from the others by the medial tail feathers being lengthened.

Gen. Sphenocercus, Gray.

Syn. *Sphenurus*, Swains.

Char.—Bill moderately slender and lengthened, the basal two-thirds or more, soft and tumid, and the corneous extremity feeble; a small nude space round the eyes; wings with the third primary not sinuated, as in the previous forms; tail wedge-shaped, with the central feathers much elongated and narrow in some species; soles of the feet slender, not broad and flat as in the others.

This genus, by the narrow toes, evidently leads from the true Green Pigeons towards the *Ptilopodinæ*. It is entirely a mountain form.

778. Sphenocercus sphenurus, Vigors.

Vinago, apud Vigors—Gould, Cent. Him. Birds, pl. 57—V. cantillans, Blyth, Cat. 1391—*Kokla* or *Kokila*, H.—*Phoo-pho*, or *Koohoo-pho*, Lepch.—*Coorbem*, Bhot.

The Kokla Green Pigeon.

Descr.—Male, general plumage green, with a ruddy tinge on the head and breast; shoulder of wings and mantle maronne, which also tinges the scapulars; a narrow yellow edging to the wing-coverts; quills dusky black; tail green above; the outer feathers slaty, with a dark sub-terminal band; beneath green; the breast brightly tinged with orange buff, extending more or less on the throat; vent and under tail-coverts pale cinnamon colour.

The female differs in wanting the ruddy tinge on the breast, and in the lower tail-coverts being mixed white and green.

Bill pale glaucous blue, almost white at the tip; irides blue and red; legs coral red; nude skin round eyes pale blue. Length 13 inches; extent 21; wing 7; tail 5½; bill at front ¾.

The Kokla Green Pigeon is spread throughout the Himalayas, extending into the hilly regions of Assam and Sylhet. It frequents the zone from 4,000 to 8,000 feet, in winter perhaps descending lower, for Hutton remarks that they leave Mussooree in October, returning in April to breed. It is common at Darjeeling, but, as Tickell remarks, not so extensively gregarious as the common green pigeons of the plains. They frequent high trees, and feed of course exclusively on fruit. Hutton found them breeding in May and June, making the usual nest of dried twigs, and with two white eggs.

The male has a most agreeable note, more prolonged and musical than that of *Crocopus*. Blyth says of it:—"The notes bear some resemblance to the human voice in singing, and are highly musical in tone, being considerably prolonged and modulated, but always terminating abruptly, and every time the stave is repeated exactly as before, so that it soon becomes wearisome to a European ear." After moulting in confinement, the green colour, in some specimens, becomes replaced by a delicate pearl grey, and the russet tinge of the head and breast becomes pale

maronne. Mr. Blyth, described a caged specimen with these tints as *V. cantillans*.

The *Kokhila* is greatly prized as a cage-bird by the natives, and is occasionally brought for sale to Calcutta, and sells at a high price.

779. Sphenocercus apicaudus, Hodgson.

Treron, apud Hodgson—Blyth, Cat. 1392—*Sampoon-pho*, Lpch.

The Pin-tailed Green Pigeon.

Descr.—Green, tinged with yellowish on the upper tail-coverts and on the lower parts, and the male, with the crown of the head and breast tinged with russet, as in the last species; primaries slaty black, two narrow yellow bars on the wing; tail, with the medial pair of feathers, yellow green at their base; grey at their tips, the others grey, with a medial blackish band; the central feathers much lengthened beyond the rest, and the elongated portion extremely narrow.

Bill glaucous blue, cere blue; legs coral-red; irides dark yellow. Length about 16 inches; extent 21; wing 6½; tail centre pair 8, next 5.

This elegant Green Pigeon has hitherto only been found in the South-east Himalayas, in Nepal and Sikim, extending, however, to the hill ranges of Assam. It is not so common near Darjeeling as the last species, and frequents a lower zone, being found in the warmer valleys. Its note is very similar to that of the last species, but less loud, musical, and prolonged.

A nearly allied species occurs in Malayana, *S. oxyurus*; and *S. Korthalsi*, Müll., from the Malayan Archipelago, is very like the Himalayan bird. One species, *S. Sieboldi*, inhabits Japan.

Sub-fam. Carpophaginæ, Fruit Pigeons.

Bill lengthened and slender, tolerably depressed at the base, with the terminal third or less of the upper mandible corneous; wings long; tail even, or slightly rounded, longer than in the *Treroninæ*; feet strong, with broad soles; tarsus well feathered.

These Pigeons are of very large size, and adorned, in many cases, with rich and metallic colors, with the lower parts usually pale and glossless. The tarsus is very short, and the feet broad, enabling them to grasp the branches well. The forehead is low in its profile, and the feathers advance on the soft portion of the bill. Their gape is wide, and they are enabled to swallow very large fruit; and the feathered portion of the chin advances far towards the tip of the lower mandible, thus increasing the width of the gape. All those whose nidification is known, lay but one egg.

Gen. CARPOPHAGA, Selby.

Syn. *Muscadivores*, Lesson, apud Gray—*Ducula*, Hodgson (partly).

Char.—Those of the sub-family: plumage glossy metallic green, or coppery brown above; of large size.

I have joined Hodgson's genus *Ducula* to *Carpophaga*, as I have been unable to find any characters to separate them, except partly of color. There are, however, several types which might be distinguished as sectional. Some appear only to differ from the rest by having a knob developed at the base of the bill, and to these Bonaparte's name *Globicera* is applied.

780. Carpophaga sylvatica, TICKELL.

C. œnea, apud JERDON, Cat. 284—BLYTH, Cat. 1401—Figured Beng. Sport. Review, 1845, pl. 3.—C. pusilla, BLYTH, Cat. 1402—*Dunkul* or *Doomkul*, H. also *Sona kabutra*, H.—*Burra harrial*, H. of some—*Pogonnah*, Mal.—*Kakarani guwa*, Tel.—*Imperial Pigeon* of Europeans in the South of India.

THE GREEN IMPERIAL PIGEON.

Descr.—Head, neck, and whole under parts, pearl-grey, purer on the crown and breast, and tinged elsewhere, and sometimes on the crown, with ruddy vinaceous; back, rump, wings, and tail, shining coppery green, brightest on the tail, and the quills slaty-grey without, dark blackish grey within; under tail-coverts deep chestnut, with which some of the feathers of the vent and flanks are also sprinkled; chin, orbital feathers, and round the base of the bill, white; axillaries buff.

Bill slaty, red at the base above, and bluish white at the tip; irides and the nude orbits crimson; legs lake red, pale on the soles. Length 18 to 19 inches; extent 30; wing 8 to 9; tail 6.

It will be seen from the synonyms I have adopted that I do not consider Blyth's small race *C. pusilla*, from the South of India, distinct from the bird of Central India. Some specimens from the South are perhaps smaller than others from Northern and North-eastern India; and examples from the East Coast are somewhat smaller than those from the West Coast; but the supposed new species was founded on a peculiarly small specimen. Should I be correct, this fine Pigeon inhabits the whole of India, from Ceylon to Assam and Sylhet, not however, apparently, occurring in the Himalayas, nor in the North-western Provinces. It also is found in Burmah, and even extends through the Malayan Peninsula to Java and Sumatra, according to Blyth. It is only found in forest countries, and is very abundant in the Malabar forests, in Central India, Midnapore, and the wooded countries to the North-east generally.

According to my observations, it is not at all a mountain species, keeping to forests at low elevations, and I cannot recall ever having seen it as high even as 2,000 feet; certainly it is more abundant at elevations from the level of the sea to 1,000 feet; and Mr. Blyth was mistaken when he stated that the specimen sent him by myself, from which he made his *pusilla*, was from the Neilgherries; indeed I have not even seen this Pigeon in the Wynaad. Layard, on the contrary, describes it as "extending into the low country in Ceylon, but their great haunt is certainly the mountain zone, though, from Dr. Kelaart's observations, it does not appear to have been seen in very high lands." It associates usually in small parties, now and then uniting into flocks of twenty or more. It wanders about from place to place, looking for trees in fruit; and, in the hot weather, visits the salt swamps on the Malabar Coast, in numbers, along with the next species, to feed on the buds of *Aricennia*, and other trees of similar habit. I found it breeding in the forests of Central India in April and May, but was unable to get at any of the nests which I saw; however, I was assured by a Shikaree that he found two eggs in one nest he

examined. Like the Green Pigeons, it betakes itself to river banks to drink, about 8 or 9 A. M., and again, I believe, in the afternoon. Its call is a low, deep, plaintive moan, called, however, by one writer, a 'harsh and croaking note, not unlike the croaking of a bull frog.' Tickell describes its call as deep and ventriloquous. The flesh is excellent eating. A writer in the *Bengal Sporting Review* states that, "a wounded bird will erect the feathers of its head and neck, and buffet with its wings the hand which captures it."

Blyth describes another species, *C. insularis*, from the Nicobars, with the upper parts darker, inclining to steel-blue, and the tail blue black. *C. ænea*, from the Moluccas, and *C. chalybura*, Bonap., from the Philippines, appear closely allied to our bird, and there are others described from the more distant islands.

The species of *Globicera* are distinguished by a fleshy knob at the base of the bill, which is said to be more highly developed in the male at the breeding season, but, otherwise, barely differs from *Carpophaga*. Nine species are recorded by Bonaparte, chiefly from the Oceanic region.

The next species, with some others, has been separated under Hodgson's generic name *Ducula*, but it scarcely differs, except in its less metallic colors. Bonaparte states that the tail is somewhat more lengthened, and the tips of the primaries less rounded.

781. **Carpophaga insignis**, Hodgson.

Ducula, apud Hodgson—Blyth, Cat. 1404—C. cuprea, Jerdon, Cat. 285—C. badia, Raffles?—*Dukul*, H. in Nepal.—*Phomok-pho*, Lepch.—*Tagyusam*, Bhot.

The Bronze-backed Imperial Pigeon.

Descr.—The whole head, neck, and under parts, pale lilac-grey, in some parts tinged with ruddy; back and wings vinaceous brown, with a faint coppery gloss; rump and upper tail-coverts dusky cinereous; tail dusky, with its terminal fourth dull ashy above; chin white; under tail-coverts buffy white; tips of the tail beneath whitish grey.

Bill dull lake-red at the base, slaty at the tip; orbits lake red; irides red-brown in examples from the South of India, hoary-grey in Himalayan specimens; legs dull lake-red. Length 18 to 20 inches; extent 26 to 30; wing 9½; tail 6¾ to 7; weight 1½ lb.

The female is a little smaller than the male, and the color of the upper parts less bronzed. One measured by Tickell, was 17 inches long, with the wing 9.

This fine Pigeon is found in the South-east Himalayas, and in the mountain regions of Malabar, in Coorg, the Wynaad, the Western slopes of the Neilgherries, and probably all along the higher ranges of the Ghâts, although not recorded by Col. Sykes. It is also found in the Khasia Hills, and in the mountains of Arracan, and possibly in other hill regions of Burmah. It is placed as distinct from *C. badia* of Java by Bonaparte and Gray, but appears to approach that species very closely. I at one time was inclined to consider the Southern species distinct from the Himalayan one, and the fact of the irides being colored differently would favor this supposition, but without further examples of both than are available in the Museum Asiatic Society, I cannot separate them. In general, it is an exclusive inhabitant of the mountain zones, from 2,000 feet to nearly 6,000 feet. I have killed it in Wynaad, in Coorg, on the Khoondah Ghât of the Neilgherries, and in Sikim, above Kursiong, where Major Tickell also procured it. It associates, in general, in small parties, or in pairs, frequenting the loftiest trees, and feeding on various fruits. Its note is something similar to that of the last, but still deeper, louder, and more groaning. Tickell calls it a deep, short and repeated groan, *woo woo woo*.

During the hot weather, from the middle of April to the first week in June, when the rains almost invariably commence on the Malabar Coast, large numbers of this Pigeon descend from the neighbouring mountainous regions of Coorg and Wynaad, to a large salt swamp in the neighbourhood of Cannanore, and there not only eat the buds of *Aricennia*, and other shrubs and plants that affect salt and brackish swamps, but also (as I was credibly informed by several native Shikarees, to whom I was first indebted

for the information of these Pigeons resorting there,) pick up the salt earth on the edge of the swamp, and of the various creeks and back waters that intersect the ground. I visited this place towards the end of May 1849, when many of the Pigeons had gone, as I was informed; but even then saw considerable numbers flying about and feeding on the buds of *Aricennia*, and then retiring a short distance to some lofty trees to rest. Although the day was unfavorable and rainy, I killed above a dozen of these fine Pigeons, and several Natives who were there with guns for the purpose of shooting them, assured me that they often killed from one to two dozens daily, simply remaining in one spot. Had I not secured the birds myself in this locality, I confess I would barely have credited the account I received of these mountain residents descending to the plains during the hottest season of the year. I presume that these Pigeons breed after their return to the hills, but I have no information on this head. It would be interesting to know if the Himalayan birds likewise visited the neighbourhood of the sea, and I am inclined to think it probable that they may do so; for, towards the end of May, I visited a forest near Kursiong, where these Pigeons abound in June and July, and neither saw nor heard one.

Bonaparte gives as appertaining to *Ducula*, besides *badia*, already alluded to, *C. lacernulata*, *C. basilis*, *C. paulina*, *C. cineracea*, and *C. rosacea*, of Temminck; the first from Java, the others from the more distant islands, Celebes, Timor, &c. He separates the large white and black species, *C. bicolor*, *C. luctuosa*, and *C. grisea*, under the name *Myristicivora* of Reichenbach. The former of these is found in the Nicobar Islands, and the Southern part of the Malayan Peninsula, as well as in many of the islands. They have a comparatively short tail. Various other beautiful species from the Philippines, New Guinea, Australia, and Oceanica, are separated by Bonaparte under the generic names of *Ptilocolpa*, *Zonœnas*, *Hemiphaga*, *Megaloprepia* and *Sylphitreron*. A very large species, with a strong helmeted bill, from the Marquesas, has been described and figured by Bonaparte under the name of *Serresius galeatus*. Blyth indicates a short-winged type, which he calls *Dendrophaps*.

The sub-family *Ptilopodinæ*, or Green Doves, are very closely allied structurally to the *Carpophaginæ*, the bill being much as in that group, slender and somewhat lengthened, and the chin advancing far forwards beneath the lower mandible; but they have the toes lengthened, somewhat more slender, with the soles not quite so broad; and they are much smaller, many of them indeed quite diminutive. The wings and tail too are a trifle shorter. In some, the first primary is abruptly narrowed (*Ptilopodeæ*, Bon.), in others (*Chrysoeneæ*, Bon.) not so. They have very brilliant but not metallic coloring, emerald green being the prevalent color, variously adorned with carmine, lake, bright yellow, &c. The tail consists usually of fourteen feathers, but in some only of twelve; in one genus, otherwise very closely allied, *Thouarsitreron*, Bonap., of sixteen; and Blyth states that one is said to have only ten rectrices. They chiefly inhabit the tropical Oceanic region, diminishing in number in the Malayan Isles, and only one species occurring in the Southernmost portion of the Malayan Peninsula, *viz.*, *Ramphiculus jambu*. In the wild state they live, it is believed, entirely on fruit, but in confinement some will eat unhusked, and even boiled rice.

The sub-family *Alectroenadinæ*, Bonaparte, are from Madagascar, the Mauritius, and the Seychelle islands. They are somewhat larger, of black and red plumage, and, says Bonaparte, exhibit an analogy with *Dasyptili* and *Caloptorhynchi* among the Parrots. Blyth says that they appear to be Ground-pigeons of the frugivorous type.

Fam. COLUMBIDÆ, Bonaparte.

Bill horny at the apex only; tail, in almost all, of twelve feathers; gape not so wide as in the last family; tarsus lengthened; feet more fitted for walking on the ground.

This family comprises the Pigeons and Doves, ordinarily so called, which feed chiefly on grains, often on the shoots and buds of certain plants, and a few partially on fruit. They differ from the preceding family by their more terrestrial habits, for which their more lengthened tarsus and narrow toes fit them. They are of more dull and sombre colours, various shades of dark-blue,

red-brown, and grey predominating, often adorned with a beautiful iridescence or play of colours on the neck, and, in many, with a marked neck spot. They are found over both Continents, more sparingly, perhaps, and with fewer types, in America.

The *Columbidæ* may be divided according to their general tone of coloring and habits into *Lopholæminæ*, Crested-pigeons; *Palumbinæ*, Wood-pigeons; *Columbinæ*, Rock-pigeons; *Macropyginæ*, long-tailed Doves; and lastly *Turturinæ*, true Doves, with perhaps one or more divisions of less extent.

The LOPHOLÆMINÆ, or Crested-pigeons, are composed of a single genus and species, *Lopholœmus antarcticus*, a remarkable Australian form, with a double crest, which is very frugivorous, and which was by some formerly arranged with the last family.

Sub-fam. PALUMBINÆ, Wood-pigeons.

Palumbeæ—Bonap. and Blyth.

Feet fitted for perching, the tarsus being somewhat shorter, and the feet more arboreal than in the succeeding groups; tail somewhat longer and more rounded.

The Wood-pigeons or Cushats are more frugivorous and bud-eaters than the ordinary Pigeons and Doves, and, were it not for having only twelve tail-feathers, and a different style of plumage, they might be ranked in the last family. They are peculiar to the Old World, are denizens of woods and forests, and feed partly on trees and partly on the ground.

The first two species differ very slightly from the true Cushats, and in a less degree from each other, and have been arranged in two genera; but as it is impossible to define them apart from each other, I shall retain them, as Blyth does in his Catalogue, under one generic form. That naturalist remarks elsewhere,—"The distinctions upon which this and other named divisions are based are so exceedingly recondite, that definition becomes impossible, and they are intelligible only when examples of the different species are compared and grouped together."

Gen. ALSOCOMUS, Tickell.

Syn. *Dendrotreron*, in part, Hodgson.

Bill small, much compressed; wings long and ample, 2nd quill equal to the 4th, 3rd longest, sinuated on its outer web beyond the middle; tail about even; lateral toes slightly unequal; claws stronger than in *Palumbus*, and somewhat more curved.

This form barely differs from *Palumbus*; the first species, however, with which Blyth associates C. *norfolciensis* of Australia, having a more tropical distribution, and being, perhaps, more strictly arboreal than the Cushats.

782. **Alsocomus puniceus**, Tickell.

J. A. S. XI. 462—Blyth, Cat. 1411.

The Purple Wood-pigeon.

Descr.—General colour fine vinaceous ruddy, somewhat paler below; the feathers, especially of the upper parts, margined conspicuously with glossy changeable green and amethystine purple, the former colour prevailing on the neck and the sides of the breast, and the latter elsewhere; the whole top of the head, including the occiput, greyish white; wings and tail blackish; the primaries tinged externally with grey; rump and upper tail-coverts dusky, edged with glossy green; lower tail-coverts nigrescent.

Bill livid at the base, with a yellow tip; irides amber-colored, with an orange red outer circle; legs and feet dull lake. Length 16 inches; extent 24; wing 8 to 8½; tail 7.

The female only differs from the male in being a trifle smaller, and somewhat duller in its tints.

This handsome Wood-pigeon is found, in India, only in the Eastern portion of Central India, extending to near the Sea coast in Midnapore, and probably southwards towards Cuttack. I never procured it on the Malabar Coast, nor in any part of Southern India, though it is occasionally met with in Ceylon. It appears to be more common to the East of the Bay of Bengal, in Assam, Arrakan (particularly the island of Ramree), and Tenasserim.

Tickell records that it occurs (in Singboom where he first observed it) in small parties of four or five, always along the banks of rivers which are shaded by large forest trees. They feed

chiefly on the fruit of the *Jamoon* (*Eugenia jambolana*) morning and evening, and roost during the heat of the day on the uppermost branches of lofty trees. They are wary, and difficult of approach. In Ceylon they appear to be migratory, and, according to Layard, feed on the fruit of the Cinnamon tree.

The next bird differs somewhat in its type and coloration, and is separated by systematists as *Dendrotreron*, Hodgson.

783. **Alsocomus Hodgsonii**, Vigors.

Columba, apud Vigors, P. Z. S. 1832—C. nipalensis, Hodgson —Blyth, Cat. 1410.

The Speckled Wood-pigeon.

Descr.—Above, dark vinaceous-ruddy, with white specks on the medial wing-coverts; head, and the upper part of the front of the neck, cinereous, with more or less of a ruddy tinge; nape vinous-grey, with pointed clear grey tips; rump and upper tail-coverts dusky ash; outer wing-coverts greyish; quills brownish dusky, the first three primaries having a slight whitish outer margin (in some specimens); tail ashy black; sides of the neck, and lower parts vinous grey, with a ruddy mesial streak to each feather most developed on the breast, less so on the neck, and the lower abdomen becoming dark vinous; flanks speckled with white; under tail-coverts dusky-ash.

Bill purplish black; irides hoary; orbital space livid; legs and feet blackish green in front, yellow behind; claws pale yellow. Length 15 inches; extent 26; wing 9 to 9¼; tail 6.

The female is rather smaller, with the blue grey of the head less pale and clear, and the ruddy parts duller.

This fine Pigeon inhabits the forests of the middle region of the Himalayas, ranging in Nepal, from 4,000 to 10,000 feet of elevation. In Sikim it keeps chiefly to the higher ranges, from 7,000 feet to 10,000 feet and upwards. It is not found on the outer range of hills in the North-west Himalayas, but is far from rare on the Tyne range and other mountains, somewhat in the interior, where Blyth was informed that it is tolerably numerous, frequenting the Pine-forests. They are generally seen in flocks

of six or seven, are very shy and difficult of approach, and live chiefly on berries.

An African Pigeon, *C. arquatrix*, is very closely allied to this. both in form and coloration.

Gen. PALUMBUS, Kaup.

Char.—Much as in the last genus, but the tarsus a trifle longer; tail shorter; sides of the neck adorned with a patch of light coloured feathers.

This is a very natural group of Pigeons, comprising the Cushat of England and a nearly allied race from the Himalayas and Chinese Tartary; together with a group of three somewhat smaller and darker colored species found respectively in the Himalayas, Southern India, and Ceylon, which, by their lesser size and tone of coloration, grade into the last group.

784. **Palumbus casiotis**, BONAPARTE.

P. torquatus, var. BLYTH, Cat. 1413.

THE HIMALAYAN CUSHAT.

Descr.—Above brownish grey; the head, cheeks, rump, and upper tail-coverts, pure ashy; nape, sides of neck, and shoulders glossed with changeable green and purple; on each side of the neck a large patch of fulvous or clayey cream color; edge of the wing, and a white longitudinal bar, formed by the outer edges of the primaries, white; winglet and primary-coverts blackish; tail grey at the base, blackish at the tip; beneath, the throat is pure ashy, the foreneck and breast vinaceous ruddy, paling on the belly, and albescent towards the vent; lower tail-coverts ashy; tail with a broad pale band.

Bill orange at the tip, whitish at the base; feet red. Length 17 inches; extent 30; wing 10¼; tail 7; bill at front ¾.

The Himalayan Cushat differs from the European bird by the neck patch being clayey-buff instead of white, and much contracted in size; also in the less extent of the white border to the primaries. Mr. Blyth also notices that, whilst in European birds the green gloss prevails above the neck-patch and amethystine below, the reverse is the case in the Asiatic race.

This Wood-pigeon has only been found in the N. W. Himalayas, near Simla, and in the Alpine Punjab, and it visits the Salt range and the plains of the Punjab during winter. Its habits are said to be quite those of the European bird.

The European Cushat inhabits all Europe, Western Asia, and North Africa; lives in woods, and feeds on grain, peas, young shoots and leaves, acorns, beech-nuts, &c.

Next come the purely Indian group alluded to above.

785. **Palumbus pulchricollis,** Hodgson.

Columba, apud Hodgson, J. A. S. XIV. 866—Blyth, Cat. 1414—Gould, Birds of Asia, pt. VI., pl. 13—C. Elphinstonei, Gray, Cat. Birds of Nepal—*Nampoong-pho*, Lepch.

The Darjeeling Wood-pigeon.

Descr.—Above, general colour dusky grey; the head, cheeks, and ear-coverts pure light ashy; the sides of the neck glossed with green and purple, and a large neck-patch of rigid, glistening feathers, black at the base, with broad isabelline tips, and whitish at the extreme tip; tail blackish; beneath, pale vinous dove-grey, more or less whitish towards the vent, and subdued white on the lower tail-coverts; throat whitish; breast brightly glossed with green and purple.

Bill livid at the base, yellow at the tip; irides yellow; legs dull red; claws yellow. Length 13½ to 14 inches; wing 8½ to 9; tail 4¾ to 5.

This Wood-pigeon, though belonging to the same group, differs conspicuously from the Neilgherry *P. Elphinstonei*, with which it was formerly confounded by Gray, by the color of the neck-patch, the less purple tint above, and the more vinous tint below. It has only been found, hitherto, in the South-eastern Himalayas, in Nepal and Sikim; and it frequents the higher elevations only, from 7,000 feet upwards. It is not very common about Darjeeling.

786. **Palumbus Elphinstonei,** Sykes.

Ptilinopus, apud Sykes, Cat. 138—Jerdon, Cat. 283—Jerdon, Ill. Ind. Orn., pl. 48—Blyth, Cat. 1415—Gould, Birds of Asia, pt. VI., pl. 12.

The Neilgherry Wood-pigeon.

Descr.—Above, the head and neck ashy; nuchal patch black, with small white tips; back of neck beyond this, and interscapulars cupreous ruddy, with some green reflections; rest of the upper plumage ruddy-brown, becoming dark-ashy on the rump and upper tail-coverts; the wings dusky, the lesser coverts mostly ruddy-cupreous, and the other coverts and quills, which are dusky black, more or less edged with the same, and the outer primaries conspicuously pale edged; tail dull black; beneath ashy, albescent on the throat, the neck and breast glossed with green, and the lower abdomen and vent albescent.

Bill and orbits deep red, the former with a yellow tip; irides ochre-yellow; legs and feet dull red. Length 15 to 16 inches; extent 25; wing 8 to 8¼; tail 5¾ to 6. Weight about 12 to 13 oz.

The Neilgherry Wood-pigeon or Imperial-pigeon, as it is sometimes called by residents on those hills, is found on the higher elevations of the Western Ghâts, probably on the Mahableshwar hills, as well as on the Neilgherries, in which locality alone I have observed it, at a height ranging from 6,000 to 8,000 feet and upwards. It ought to be found in Coorg; but has not, I believe, been recorded from elsewhere. On the Neilgherries, it frequents the sholas or dense woods, singly, or in small parties of five or six, feeding on various fruit and buds, and occasionally on small snails, to procure which it descends to the mossy banks, and I have, now and then, seen it on the ground outside a wood. I frequently found some small *Bulimi* in the crops of those I examined. Colonel Sykes states it to be a rare bird in the Deccan, and only found in the dense woods of the Ghâts.

A very closely allied race or species occurs in Ceylon, and has been named *Palumbus Torringtonii* by Kelaart. It differs from the Neilgherry bird in having the back and wings plain dark slaty, without a trace of the ruddy margining to the feathers; the head and neck are strongly tinged with vinaceous, with a whiter throat; and in some other points.

The genus *Janthœnas*, Reichenbach, is appropriated by Bonaparte, for certain richly metallic Pigeons from the Oceanic region, which are placed among the *Carpophagæ* by Gray; and *Trocaza*

and *Turturœna*, Bonaparte, from Madeira, Mauritius, and Africa, comprise certain Pigeons placed by that ornithologist among the Wood-pigeons.

Sub-fam. COLUMBINÆ.—Rock-Pigeons, *Columbeæ*, Bonap.

Feet fitted for walking; tarsus longer and less feathered. Find their food mostly on the ground.

This family comprises the blue Rock-pigeons and the so-called Stock-pigeons and their allies, from some species of which our domestic Pigeons have sprung.

The first genus noticed is intermediate to the Cushats and the true Pigeons, as expressed by the name.

Gen. PALUMBŒNA, Bonap.

Feet fitted as much for perching as for walking on the ground. In form, coloring, habits, and nidification intermediate to *Palumbus* and *Columba*.

The well-known *C. œnas* of Europe is the type of this genus, which is essentially arboreal, and migratory.

787. **Palumbœna Eversmanni**, BONAPARTE.

P. œnicapilla, BLYTH—*Kummer-kalla, H.*

THE INDIAN STOCK-PIGEON.

Descr.—Dark ashy, with a whitish grey rump; crown and breast tinged with vinaceous; two or three black spots on the wings, forming the rudiments of bands, and the end of the tail black, its outermost feather white for the basal two-thirds of its exterior web, and showing a black, and then a narrow grey band towards its tip; beneath, the wings whitish, where dark ashy in the European bird.

Bill yellowish translucent; legs with a yellowish tinge; skin round the eye yellow; irides buff. Length 11½ inches; extent 24; wing 8; tail 4. Weight 7½ oz.

This Pigeon is a smaller bird than *P. œnas*, with a proportionally shorter tail, barely reaching beyond the tips of the wings. It differs, too, from the European bird in the rump being greyish

instead of white, in the crown being tinged with vinaceous, in the winglet having less black, and in the grey band of the tail, conspicuous in the European bird, being barely discernible in the Indian.

The Indian Stock-pigeon was discriminated, some years back, by Mr. Blyth, who has since considered it identical with Bonaparte's bird described from Western and Central Asia. It has been noticed in India, in Sindh, where found by Major Boys, and it doubtless occurs throughout various other districts of Northern India. It flies in pretty large flocks, and affects trees. A correspondent of the *Bengal Sporting Review* states that he saw them in hundreds at Hansi in March, 'but they soon disappeared. They feed in the fields, morning and evening, and roost in the day (and I suppose the night also) in trees, generally in the common Babul trees. To Europeans here (at Hansi) they are known as the Hill-pigeons.' They are probably migratory in India, breeding in Central Asia. Buchanan Hamilton, however, states that a wild Blue-pigeon breeds in Gorukpore in old plantations, and is a great consumer of grain. He, however, considered it the same as 'one that breeds on rocks on the banks of the Jumna and other places,' *i. e.* the common Blue-pigeon. They have most likely been frequently overlooked by sportsmen and others considering them simply to be the same as the common wild Blue-pigeon, *Col. intermedia*, and I have observed at various stations certain flocks of Pigeons always settling during the day on trees. It is a much smaller bird, however, than the common Blue-pigeon of this country, whilst its analogue in Europe, *P. œnas*, is larger than the wild Rock-pigeon, *C. livia*.

The European bird, *P. œnas*, says Blyth, is called the Stock-pigeon, because it commonly builds in wood-land districts, in a cavity of some old, and often ivy-clad, pollard-stock, thus forming neither a platform nest like the Cushat, nor resorting to rocks like *C. livia*; but in more open country it resorts much to the deserted holes in Rabbit burrows, or it nestles under thick furze bushes. It is a winter bird of passage in England, supporting itself chiefly by beech-mast, and delighting to roost in the tallest beeches. The habits of our Indian species appear to be somewhat similar.

Gen. COLUMBA, Lin. (as restricted.)

Char.—Feet fitted for walking on the ground, the tarsus being somewhat lengthened; nestle in holes of rocks, buildings, or wells; capable of domestication.

This genus comprises the Rock and House-pigeons, and various affined races of the Old World. They rarely perch on trees, and some never, roosting and nestling in caverns, hollows of rocks, sea-cliffs, recesses of buildings, &c.

788. **Columba intermedia**, STRICKLAND.

Col. livia, var, BLYTH, Cat. 1417—C. ænas, apud SYKES, Cat. 144—JERDON, Cat. 290—Figured in *Beng. Sport. Rev.* 1845, pl. IV.—C. livia, apud ADAMS, Birds of India, 208—*Kabutar*, H.—*Gudi pourai*, Tel., *i. e.* Pagoda-pigeon—*Kovilpora*, Tam. *Parwi*, Mahr.

THE BLUE ROCK-PIGEON.

Descr.—Colour slaty-grey, darker on the head, throat, and breast, also on the upper and lower tail-coverts and tail, which last, has a blackish terminal band; nuchal feathers divergent at their tip, and brightly glossed with changeable green and amethystine; two black bars on the wing, formed by the greater coverts and the secondaries being tipped with black, on the outer web only; and the outermost tail-feather, with its external web, gradually more albescent to the base.

Bill blackish, with a white mealiness at the base above; irides dull orange; legs dull reddish-pink. Length 12 to 13 inches; extent 23; wing 8¾ to 9; tail 5; bill ¾, shorter than in *P. æni-capilla.*

This common Blue Pigeon differs from *C. livia* of Europe only in having an ash-colored, instead of a pure white rump. This, however, appears to be constant, and as Blyth remarks, is also always observable in domesticated varieties in this country, when these assume the normal coloring.

The Blue Pigeon of India is one of the most common and abundant birds throughout the country, congregating in large flocks, and breeding wherever they can find suitable spots. They are

most partial to large buildings, such as Churches, Pagodas, Mosques, Tombs, and the like; frequently entering verandahs of inhabited houses, and building in the cornices. Holes in walls of cities or towns, too, are favorite places, and, in some parts of the country, they prefer holes in wells, especially, I think, in the West of India, the Deccan, &c. In default of such spots, they will breed in crevices and cavities of rocks, caverns, and sea-side cliffs; and I have often noticed that they are particularly partial to rocky cliffs by waterfalls. The celebrated falls of Gaissoppa are tenanted by thousands of Blue Pigeons, which here associate with the large Alpine Swift. It is more rare in forest countries generally than in the open country. It extends from Ceylon throughout India to the Himalayas, and also to Assam, Sylhet, and Burmah. It is doubtful if it occurs in Affghanistan, or in other parts of Central Asia. These Pigeons are held in favor by most natives, and almost venerated by some; and if they build in the house of a native, he considers it a most fortunate omen. They are, however, very destructive to grain, assembling in vast flocks in the cold weather, and, in general, the natives do not object to their being shot. They are undoubtedly the origin of most of the domestic Pigeons of India.

789. **Columba rupestris**, PALLAS.

Zoog. Ross. As., pl. 25—C. livia, pied variety, ADAMS, Birds of India, 208.

THE BLUE HILL-PIGEON.

Descr.—Like *intermedia*, but much lighter in its plumage. Top of head, and side of face, ashy-grey; back of neck glossed with green; wing-coverts and upper part of back light grey; the middle of the back white; upper tail-coverts dark ashy-grey; quills grey, with black shafts, and darker at the tips and on the outer webs; some of the larger wing-coverts, the winglet, and last secondaries, with a patch of greyish black, forming two indistinct curved bands; tail dark grey at the base, broadly tipped with black, and with a broad stripe of white between these two colors; the outer tail-feathers pure white from their bases on the external web,

tipped with black; beneath, the chin is ashy-grey; the neck purple glossed, and the upper part of the breast glossy green, blending into ashy light grey on the belly, flanks, and vent; lower wing-coverts white, blending with grey towards the anterior margin of the wing.

Bill black; cere grey; irides red; legs pink. Length 12¾ inches; extent 25; tail 5. Weight 7½ oz.

The above description is taken from Major Boys, who procured this Pigeon in Kumaon, where it is known as the pale blue Rock-pigeon. It is also, perhaps, as suggested by Blyth, the Hill-pigeon of Mussooree, which is said in summer to fly in small flocks to the Deyra Doon in the morning, returning to the hills in the evening; and it is certainly the pied variety of the Blue Pigeon observed by Adams in Ladak, &c. Pallas' bird is said to be found in Central Asia, in Daouria, in hilly and rocky places. Specimens of this race of Pigeon appear to be unknown in most of our Museums, and would be highly acceptable.

Among the races allied to the two foregoing, are *C. livia* of the whole of Europe, Northern Asia to Japan, and Northern Africa, which breeds in extensive societies in rocky cliffs and caverns, especially on the seashore. It is said to feed much on the tops of plants, and also on Helices. It is the origin of most of the varieties of domestic Pigeons of Europe. Bonaparte separates from it *C. turricola*, of the South of Europe, Persia, &c., which wants the white rump of *livia*, and should, therefore, very closely approach the Indian *intermedia*. *C. Schimperi*, Bonaparte, found in very numerous flocks in the fields in Abyssinia, and perhaps *C. gymnophthalmos*, Gray, from Senegal, also appertain to this division.

The next bird differs considerably from all the others.

790. **Columba leuconota**, Vigors.

P. Z. S. 1831—Gould, Cent. Him. Birds, pl. 59—Blyth, Cat. 1418—'The Snow-pigeon' of some sportsmen on the Himalayas, or Imperial Rock-pigeon of others.

The White-bellied Pigeon.

Descr.—The top of the head and ear-coverts ashy-black; back of neck white; interscapulars light brownish grey; rump white;

wings light brownish grey, pale ashy on the medial coverts; the primaries dull blackish towards their tips; the secondaries broadly tipped with dusky, and the tertiaries and their coverts having a sub-terminal dusky band and broad greyish tips, producing a series of three short bars, and a trace of a fourth; tail (with its upper coverts) ashy-black, with a broad greyish white bar occupying the third quarter from the base of its middle feather, and narrowing and curving forward to reach the tip of its outermost feathers, which are also white at their base on the outer webs.

Bill black; irides yellow; legs lobster-red. Length nearly 14 inches; wing 9½; tail 5.

This remarkably colored Pigeon is found on the Himalayas, chiefly towards the North-west, and is stated to frequent rocky heights and sequestered valleys, from 10,000 feet to the snow level, in large parties.

It feeds in the fields, returning to the rocks to roost; and is said to be shy and wary.

Other true *Columbinæ* of the Old World, are *C. guinea*, L. (*C. trigonigera*, Wagler); referred to *Stictœnas*, Reichenbach, stated by some to be the common domestic Pigeon of Abyssinia; and *C. albitorques*, Rüppell, referred to *Tœniœnas*, Reichenbach, said to have the bill remarkably short.

There are a good many American Pigeons placed in this division by Bonaparte under his section *Americanæ* (*Picazurus*, of O. des Murs), distributed by him in four different genera.

Sub-fam. MACROPYGINÆ, Bonap., Cuckoo-doves.

Head small; feet short; tail very long, graduated or wedge-shaped; wings rather short.

This division comprises a small group of Pigeons peculiar to the Indian region, more especially to the Malayan islands, and one species extending to Australia. They are distinguished by their long and broad tails; are more or less frugivorous in their habits, occasionally feeding on the ground, and, in their physiognomy, and partly in their coloration, they resemble Doves rather than Pigeons. Ruddy brown is the prevalent colour; in many disposed in narrow cross rays, as in the rufous phase of certain Cuckoos,

and many have the play of colours on the neck as in the *Columbæ*. They are mostly mountaineers, and confined to forests. Some are said to feed much on pepper and other aromatic fruits, and their flesh is highly esteemed. One species only inhabits our province. Mr. Blyth considers them to be nearly related to the division of *Palumbinæ* in which *Alsocomus* occurs, and I agree with him that they have affinities for that group; but to have placed them next the Wood-pigeons, would have broken the chain of affinities between the *Palumbinæ* and *Columbinæ;* and, taking their Turturine physiognomy into consideration, I think they may properly be placed between the Pigeons and Doves. They appear, however, also to have certain affinities for the *Treronidæ*.

Gen. MACROPYGIA.

Bill long and slender; wings short; tail long, broad, much graduated; legs and feet fitted for perching; lateral toes somewhat unequal; soles flat; rump more or less spinous.

This genus comprises several birds from the East-India islands; and the following species, (with a closely allied bird from Java) has been separated as *Coccyzura*, Hodgson, chiefly distinguished by the tail being strongly barred.

791. **Macropygia tusalia,** HODGSON.

Coccyzura, apud HODGSON, J. A. S. XIII. 936—BLYTH, Cat. 1424—C. leptogrammica, TEMMINCK, Pl. col. 248—*Tusal*, Nipal —*Phoochong-pho*, Lepch.—*Pumok*, Bhot.

THE BAR-TAILED TREE-DOVE.

Descr.—Male, upper plumage dusky black, with numerous narrow, deep rufous bars on the mantle, wings, rump, and upper tail-coverts; forehead tinged with lake-color; occiput and nape dull ashy-vinaceous; glossed with changeable green and amethystine; primaries dusky black; tail obscurely barred, with the inner webs more or less rufous near their base, outer feathers ashy, with a broad sub-terminal band, and the outer web of the outermost feathers whitish; chin and throat whitish, tinged with lake; breast dull vinous-ashy, with purple and green reflections, and the rest of the lower parts yellowish-white; lower tail-coverts buff.

Bill black, tinged with lake near the base; orbits red; orbitar skin pale livid; irides brown, with an outer narrow circle pink; legs dull lake red. Length 16½ inches; extent 22; wing 8; tail 8½.

The female differs in having the forehead and cheeks pale vinous yellow, the nape less brightly glossed, the barring more developed than in the male, and especially on the tail; in the chin being pale buffy, and in the breast and lower parts being finely rayed across with dusky on a fulvous ground; the crown is likewise barred. The young have the crown distinctly barred, and the whole plumage more or less so, but with fewer bars than in the adult female.

This bird appears to be very closely allied to *C. leptogrammica* of Java, with which Gray and Blyth formerly united it, but it is placed as distinct by Bonaparte, who states that in the Java bird, the throat is cinnamomeous, the lateral tail-feathers blackish, with a grey tip, and the lower parts whitish; with some other points of difference.

This fine Tree-dove is found in the S. E. Himalayas, from Nepal to Bootan, extending to the Khasia Hills. In Sikim it frequents the zone, from 3,000 to nearly 7,000 feet; is found singly, occasionally in small parties; feeds on various fruits, which it chiefly takes from the trees, now and then descending to the ground. Its voice is a deep, repeated, *coo*. I found its nest on the Khasia Hills at about 4,500 feet, on trees, at a moderate elevation.

Other species of this genus are *M. rufipennis*, Blyth, from the Nicobars; *M. ruficeps*, Temm., from Java, which also occurs in Tenasserim; several others from the more distant islands; and *M. phasianella*, Temm., from Australia and New Guinea. Bonaparte has also *M. macrura*, Gmelin, from Ceylon, which does not appear to have been noticed by late observers in that island. Blyth gives an interesting account of the habits of *M. phasianella* in confinement, which would fight with *Hurrials* for the plantains given as food, which it appeared very fond of; but it would eat maize and grain. It was chiefly active, morning and evening, and scarcely moved from its perch during the day, in this approximating the Green-pigeons.

Some species from the Oceanic region are placed in *Turacœna*, and *Reinwardtœna*, Bonaparte; and the celebrated Passenger-

pigeon of North America, *Ectopistes migratoria*, is placed in this group by Bonaparte, with which it agrees in its arboreal habits and lengthened tail. Blyth considers it a long-tailed Cushat. It has been occasionally killed in Britain.

Sub-fam. TURTURINÆ, Bonap.

Feet fitted for walking on the ground; tail somewhat lengthened (typically), rounded or graduated, and with pale tips to the outer feathers; of delicate make, with small heads; neck usually without the iridescent play of the *Columbinæ*, but frequently adorned with neck-spots as in the *Palumbinæ*, or with rings.

The Doves are a well marked group, albeit devoid of any strongly marked technical distinctions, the chief of which appears to be the form of the tail. They have, however, a marked physiognomy, and form a very natural group. Their colours are usually pale, as compared with Pigeons. They mostly feed on the ground on grain, pulse, and other small seeds, and are not, in general, gregarious, though large numbers may be seen feeding together. They chiefly frequent open and cultivated country, a few preferring highly wooded or forest districts; and many are very familiar birds, feeding close to houses and stables. They breed on low trees, or shrubs, constructing the usual slight platform nest, and they breed at all seasons of the year. They are confined to the Old World. The Asiatic species, distributed in one genus, are divided into two by Bonaparte.

Gen. TURTUR, Selby. *Panduk* H. in Behar,
Fachta H. in the south.

Char.—Bill slender, the tip very slightly arched; the two first quills graduated, 2nd and 3rd longest; tail somewhat long, usually rounded; toes long and slender; the claws slightly curved.

The Turtle-doves are divided by Bonaparte into the sections, *Auriti*, *Maculicolles*, and *Tigrini*, to which I will add a fourth, *Streptopeleæ*, raised by Bonaparte to distinct generic rank.

1*st*, *Auriti*.

The British Turtle-dove is the type of this section, and the species belonging to it are distinguished by a peculiar coloration, more or less ruddy, with broad rufous edgings to the wing-feathers,

and the neck patch black, tipped greyish-white; they are of larger size than the birds of the other two sections, and moreover are more gregarious in winter.

792. Turtur rupicolus, Pallas.

Columba, apud Pallas—C. gelastes, Temm., Pl. col. pl. 550? —T. vitticollis, apud Hodgson—T. orientalis, Gray (in part)—T. meena, Blyth (in part), Cat. 1436—Adams, No. 212.

The Ashy Turtle-dove.

Descr.—Head bluish-ashy, with the occiput and nape rufescent; back and rump ashy brown, more ashy on the latter; wings dusky; the coverts widely margined with dark rufous; tail bluish-black, with a broad white tip; beneath brown, becoming whitish towards the vent; lower tail-coverts white, with a faint tinge of ashy; neck-spot black.

Bill blackish; legs dull purple-lake. Length about 12 to 13 inches; wing 7 to 8; tail 5½.

This Dove most closely resembles the Turtle-dove of Britain, but is somewhat larger, has the occiput and nape more rufescent, and the rump more ashy, whilst the lower tail-coverts are not so pure white in the Indian bird. A drawing of Buchanan Hamilton in the Library of the Asiatic Society, Calcutta, appears to represent the European bird rather than *rupicolus*, but may be intended for the latter. This last inhabits Siberia and Japan, and probably most of Central Asia, and has even been killed in Northern Europe. Mr. Blyth states it to be common in collections from Simla and Mussooree, and that it was also obtained by Hodgson in Nipal. I should, however, imagine it to be a winter visitant to the hills only; and that the bird mentioned by Hutton as 'a mere summer visitor at Mussooree,' must refer to the next species, *T. meena*.

793. Turtur meena, Sykes.

Columba, apud Sykes, Cat. 139—C. agricola, Tickell—T. pulchrala, Hodgson—Jerdon, Cat. 296—Blyth, Cat. 1436 (in part)—*Kulla fachta*, H.—*Basko fachta*, H. in the North—*Yedru peda guwa*, Tel.—*Sam ghughu*, Beng.—*H'hulgah*, Mahr.

THE RUFOUS TURTLE-DOVE.

Descr.—General colour vinaceous brown, ashy on the forehead and crown, and whitish towards the base of the bill, and more or less mixed with ashy and dusky above; rump and upper tail-coverts deep grey; wing-coverts and scapulars dusky, broadly margined with rufous; secondary coverts usually ashy; winglet and primaries, with their coverts, dusky, the latter edged with whitish; tail dusky ash, the outer feathers successively more broadly tipped with deep grey, paling on the outermost feather; beneath, the chin and throat whitish; the rest of the plumage pale vinaceous brown, deepest on the breast, and becoming albescent on the lower abdomen; vent and lower tail-coverts light grey; the neck-patch black, with grey tips, narrower than in the preceding species.

Bill blackish, with a tinge of lake-red; irides orange; legs dull purple. Length 11½ to 12½ inches; wing 7; tail 4½.

This species differs from the last by its smaller size, and the general rufous tone of coloring, also by the grey tip to the tail. It is found throughout a considerable part of India, in the cold weather only, being a regular winter visitant, retiring to the hills to breed. It is more rare in the South of India than in Central and Northern India, and I did not observe it in the forests of Malabar, though observed by Elliot in Dharwar, and by Sykes in the Northern part of the Ghats; but I have procured it in bamboo jungles on the Eastern Ghats, in Goomsoor, in Central India, and also in Eastern Bengal, the Khasia Hills, and Cachar. Mr. Blyth states that numbers of newly caught birds may frequently be seen in the bird-shops of Calcutta, and it occurs, though rarely, in Ceylon. It appears more social than most of the other Turtle-doves, and, indeed, is frequently seen in large flocks. As it does not breed in the plains, I am inclined to think that the species noticed by Hutton as breeding at Mussooree, must be this bird rather than the Northern one, *T. rupicolus*, which, according to all analogy, ought to breed far North. Whichever it be, Hutton states that it is "a mere summer visitor at Mussooree, where it arrives early in April, when every wood resounds with its deep-toned cooing, being not found lower that 6,000 feet,

and it departs in October. It breeds in May, making a platform nest on tall forest trees." If this be, as Blyth conjectures, *rupicolus*, where does it go to in October? It does not, that we know, visit the plains of India, and it can barely be expected to go north at that season. Blyth states that he has often had *T. meena* in confinement in an aviary, and remarked them to be very taciturn, scarcely ever uttering a sound.

Other allied species, besides *T. auritus* of Europe, are *T. lugens* and *T. isabellinus* of North Africa; and *T. erythrocephalus* of Southern Africa. *T. cinereus* is recorded from China and the Philippines.

T. picturatus, Temm., from Madagascar, *T. rostratus*, from the Seychelles, and *T. precortianus*, Bonap., from the Marrianne Islands, are placed by Bonaparte in this section; but Mr. Blyth remarks that these should stand in a separate section, *per se;* for they do not exhibit the coloration of this group.

2nd, Maculicolles—Bonap.

This section, which Blyth called neck-laced Turtle-doves, comprises some small species of a vinaceous hue with grey wings, and a broad gorget, more or less complete in front, of black feathers, with rufous tips. Two or three races have been discriminated, very closely allied to each other.

794. **Turtur cambayensis,** GMELIN.

Columba, apud GMELIN—T. senegalensis, apud SYKES, Cat. 143—JERDON, Cat. 293—BLYTH, Cat. 1438—T. maculicollis, WAGLER (in part)—*Tortru fachta*, H.—*Chitti bella guwa* and *Sowata guwa*, Tel.—*Touta-porah*, Tam.

THE LITTLE BROWN-DOVE.

Descr.—Above brown, the head and upper part of the neck pinkish vinaceous; wing-coverts, except towards the scapulars, pure light grey; winglet, primaries, and their coverts, dusky; the secondaries tinged with grey; tail with the middle feathers brown; the others black at the base, white for nearly their terminal half; beneath, the neck and breast pinkish vinaceous, paling below, and passing to white on the belly and lower tail-coverts; the sides of

the neck with a patch on each side, nearly meeting, black at the base, rufous tipped, the black hardly apparent except when the neck is stretched.

Bill blackish; irides dark brown, with a whitish inner circle; legs lake-red. Length 10 to 10½ inches; extent 14; wing 5; tail 4½. The tail is graduated to upwards of an inch, and the feathers slightly narrowed towards their tips.

This little Dove is found throughout the greater part of India, not occurring in Ceylon, Malabar, or Lower Bengal, nor in the countries to the eastward; but very abundant in Central, and especially in Western India, also in Sindh and the Punjab. It is a very familiar bird, entering gardens and feeding on public roads, and close to houses and stables, without any alarm; but it is also very abundant in all low bushy jungles. It breeds in Southern India at various times, and Hutton records that it visits Mussooree in April, remaining to breed, and departing again in autumn. Its *coo*, says Blyth, is 'low, subdued, and musical, a dissyllabic sound, repeated four or five times successively,' and of which its Hindustani and Tamil names are a sort of imitation.

Its near ally, *T. senegalensis* or *Ægyptiacus* is very common in Northern Africa and Western Asia, is called the Palm-dove by some, and swarms in all the oases of the desert. It was formerly considered identical with the Indian species, but differs in being somewhat larger, brighter in colors, and with the rump distinctly ashy. It occurs occasionally in the South of Europe, in Spain, and about Constantinople. Another race, from Bokhara, *T. Ermanni*, is indicated by Bonaparte.

3rd, Tigrini—Bonap.

These Doves have a broad half-collar on the nape, consisting of black feathers, divergent at the tips, each tip ending in a small round white spot; the orbits are nude, and the plumage of the wings and upper parts is more or less spotted.

795. **Turtur suratensis,** Gmelin.

Columba, apud Gmelin—Blyth, Cat. 1435—T. tigrina, Temm., apud Auct.—Sykes, Cat. 140—Jerdon, Cat. 292—C.

turtur, var. GRIFFITHS, An. Kingd., with figure—T. ceylonensis, REICHENB.—*Chitroka fachta*, H.—*Chitla*, H. in the North-western Provinces.—*Chaval ghughu*, or *Telia ghughu*, Beng.—*Kangskiri*, H., at Bhagulpore—*Poda bella guwa*, Tel.—*Puli-pora*, Tam. *i. e.* Spotted or Tiger-pigeon—*Bode*, of Gonds—*Ku-er-pho*, Lepch.—*Piap-chu*, Bhot.

THE SPOTTED DOVE.

Descr.—Head pale vinaceous, greyish on the forehead; upper parts generally dusky, each feather with two pale rufous isabelline terminal spots, enlarging and spreading up each side of the feather upon the wing-coverts, the blackish contracting to a central streak, having broad pale vinaceous lateral borders; edge of the wing, with some of the nearest coverts, light grey; tail with the central feathers brown; the outermost ones black at the base, white for the terminal half, and the others intermediate in their coloring; lower parts pale vinaceous, more or less albescent on the throat, and passing to white on the vent and lower tail-coverts.

Bill dull leaden-black; irides dark hazel, surrounded by a reddish sclerotic; legs dark purplish red. Length about 12 inches; extent 16½; wing 5¾; tail 5½. The female is a trifle less. The tail is graduated for 1½ inch, and the feathers slightly attenuated towards the tip.

This species has been generally confounded with *T. tigrina* of the Burmese countries, but differs in some slight points, as was first recognized by Bonaparte and Blyth. It is of somewhat smaller dimensions, duller in its tints, and the white spots forming the nuchal patch, are rounded, and not angular or square as in the Malayan race; nor are the wing-coverts so white.

The speckled Dove of India is diffused throughout all India, from Ceylon to the Himalayas, to a height of nearly 7,000 feet; and equally so in the North-eastern Provinces of Assam and Sylhet. As a rule, it is most abundant in forest districts, or well-wooded countries, and is consequently rare in the bare Carnatic table-land, the Deccan, and the North-western Provinces generally; and most abundant on the Malabar Coast up to Surat, Lower Bengal and the foot of the Himalayas, with the lower ranges; and

in fact, though with exceptions, this Dove and the last species, *T. cambaiensis*, in many parts of the country, replace each other.*

It breeds throughout the country, and at various seasons, and Hutton records it as migratory to the hills near Mussooree, where it breeds at about 5,000 feet. In the districts where it abounds, it is nearly as familiar as the last Dove, entering gardens, feeding on roads, near houses, &c. 'The *coo* of this Dove,' says Blyth, 'is plaintive and agreeable, something like *oot-raow-oo—oot-raow-oo ;* but far from easy to express in writing.' The same Naturalist remarks that the Crows destroy a large proportion of the eggs and young about Calcutta and its environs.

The other race, *T. chinensis*, Scop. (*tigrina*, Temm.) is spread through most of the Burmese and Malayan countries to China and the Philippines.

4th. Streptopeliæ—Ring-doves.

These are distinguished by plain, light colored plumage, and a black collar round the neck. The domestic Ring-dove is the type of the group, but it is not satisfactorily ascertained from which species or race it has sprung.

796. Turtur risoria, Linnæus.

Columba, apud Linnæus—Sykes, Cat. 142—Jerdon, Cat. 294—Blyth, Cat. 1430—*Dhor fachta*, H. in the South—*Kalhak*, or *Kahalaki*, and *Pauk-ghughu*, Beng.—*Pedda bella-guwa*, Tel.

The Common Ring-dove.

Descr.—Head delicate pale vinous-grey, more or less whitish on the forehead; nape pale vinaceous; a narrow black collar on the nape set off with whitish above, and slightly so below; upper plumage uniform light grey-brown; edge of the wing pure ashy; primaries dusky, with slight whitish margins bordering their tips; middle tail feathers uniform with the back above; the lateral feathers marked with black about the middle, passing to greyish on the basal half, and to white on the terminal, and these successively

* That two such common Doves as *T. cambaiensis and T. suratensis*, should have received their specific names from these localities, shows the early nature of our commerce with the West of India.

more pronounced externally; beneath very pale vinaceous, whitish on the throat, passing to light greyish towards the vent, and the lower tail-coverts pure ashy; wings underneath greyish-white. Bill black; irides crimson; orbitar skin whitish; feet dark pink-red. Length 12½ to 13 inches; extent 20; wing 6½; tail 5.

The Ring-dove is generally diffused throughout India, frequenting hedges and trees in the neighbourhood of cultivation, and also low bush or reed jungle. It is found in Ceylon, but is rare in Malabar, and generally in forest country, and it appears not to occur in Arrakan, nor in the countries to the East of the Bay of Bengal. Layard notices its partiality for *Euphorbia* bushes, in which, he says, it generally builds its nest. Blyth states that it 'inclines to be more gregarious than our other Doves;' but less so, I think, than *T. meena*. Like the other Doves, it breeds in the plains at all seasons, but also, it appears, ascends the Hills near Mussooree, to breed there in spring. "The *coo*," says Blyth, "is quite different from that of the domestic Turtle-dove, and may be expressed by *kookoo-koo, kookoo-koo*."

Several other species allied to *risoria* are found in Africa; and one or two in the Malayan province, *viz.*, *C. bitorquata*, Temm. and *C. dussumierii*, Temm., both from Java and the neighbouring isles. They are all very closely allied races.

The next species differs somewhat in type by its shorter tail, and the sexes differing in plumage.

797. **Turtur humilis**, Temminck.

Columba, apud Temminck, Pl. col. 258 and 259—Sykes, Cat. 141—Jerdon, Cat. 295—Blyth, Cat. 1432—T. risoria, var. apud Franklin—*Seroti fachta*, H.—*Golabi ghughu*, *Tuma khuri*, and *Ithuiya ghughu*, Beng., *i. e.* rose-colored, or copper-colored, or brick-colored Dove—*Rah-guwa*, Tel., *i. e.* Tile-colored Dove—sometimes *Peri-aripu guwa*, Tel.

The Red Turtle-dove.

Descr.—Male, head ash-grey, paler towards the forehead; a black half collar, well set off by whitish above; general color above fine vinous or brick red; the rump and upper tail-coverts

dusky-ash; winglet, primaries and their coverts, and the secondaries, blackish; tail, with the middle feathers ash-brown; the rest blackish at the base, and broadly tipped with white, successively more broadly from the centre, and spreading up the whole exterior web of the outermost feather; beneath, the chin whitish, rest of the lower parts pale vinous red; vent and lower tail-coverts white, tinged with ashy; wing beneath light ashy.

Bill black; irides dark brown; legs purplish red. Length 9¼ inches; wing 5½; tail 3¼.

The female is a trifle smaller, and of a dull earthy brown, paler below.

The Red Turtle-dove is found throughout all India, from Ceylon up to the foot of the Himalayas, and the Punjab, avoiding the Malabar forests, and, generally, the jungly and hilly countries, and not very common, as Blyth tells us, in Lower Bengal, but extending into Assam, Arrakan, and Northern Burmah, where I obtained it near Thayetmyo. It also extends to the Philippine Islands. It affects large groves of trees near cultivation, often feeding under the shade of trees, but also betaking itself to fields, grass downs, and bare spots near rivers or tanks. Its *coo* is short, deep, and grunt-like. Blyth states that he has bred them in confinement in an aviary, and that cages full of newly caught birds are often to be seen in the Calcutta bird-shops.

Several Doves of slightly differing type occur in Africa, which are distributed in four genera, one of them, *Œna Capensis*, having a long and graduated tail. Gray includes among the Turtles, *Geopelia*, placed by Bonaparte and Blyth in *Phapinæ*, but the latter Naturalist states that they are barely separable from the *Turturinæ*.

Fam. GOURIDÆ, Ground-doves.

Wings moderate; tarsus somewhat lengthened, as are all the toes.

In this family, the wings are occasionally shorter and less pointed than in any of the previous groups, and the feet are lengthened, and better suited for their ground habits. They comprise several distinct groups. 1st. *Phapinæ*, or Ground-doves of Australia and Malayana; 2nd. *Zenaidinæ*, American Ground-doves; 3rd. *Calœninæ*, or Nicobar Ground-pigeons; 4th. *Gourinæ*, or Crowned-

pigeons of New Guinea. These two last groups are elevated to distinct family rank by Bonaparte. India possesses only one representative of this family, belonging to the first sub-family.

Sub-fam. PHAPINÆ, Ground-doves.

Tarsus much lengthened, not feathered; tail consisting of twelve, fourteen, or sixteen feathers.

The Ground-doves comprise a series of very beautiful small Doves, many of them adorned with metallic hues, and of swift flight. They are divided by Bonaparte into the *Phapeæ*, *Chalcophapeæ* and *Geopelieæ*.

Chalcophapeæ, with twelve tail-feathers.

The species belonging to this group have longer wings than the others, and only twelve rectrices, the two other divisions having fourteen or sixteen; and the birds composing it are more arboreal in their habits. It consists only of a single genus.

Gen. CHALCOPHAPS, Gould.

Char.—Bill slender; wings moderately long, 2nd and 3rd quills nearly equal and longest; tail rather short, rounded; tarsus moderately long, not feathered; toes long, hind toe lengthened; claws moderately curved.

These birds have rich glossy metallic green plumage, and a very swift flight; feed on the ground, but betake themselves to trees for shelter.

798. Chalcophaps indicus, LINNÆUS.

Columba, apud LINNÆUS—C. javanica, GMELIN.—C. superciliaris, WAGLER—JERDON, Cat. 291—BLYTH, Cat. 1440—*Ram ghughu*, and *Raj-ghughu*, Beng.—*Andi bella guwa*, Tel.—*Imperial Dove* of Sportsmen.

THE BRONZE-WINGED DOVE.

Descr.—Male, forehead white, continued as a supercilium over the eye; crown of the head and the middle of the neck ash-grey; back and wings shining dark emerald green, slightly glossed with golden; the feathers of the back distinct and scale-like; two broad

dusky bars alternating with two greyish white ones on the lower back and rump, the feathers, with the basal and middle portion of the shaft, very broad and flattened; tail dusky, the two outer feathers on each side whitish-grey, with a black sub-terminal band; primaries dusky, and a white bar at the shoulder of the wing; beneath, the whole neck, breast, and lower parts, vinaceous red-brown, paler on the lower abdomen; the lower tail-coverts ashy, the longest being blackish; wing beneath dark reddish brown.

Bill bright coral red, dusky at the base; orbits livid fleshy; irides dark brown; feet dull purple red. Length 10½ inches; extent 17½; wing 5½; tail 3¾.

The female has the forehead greyish white, and the supercilium narrower, the head rufescent, the lower parts browner, and the under tail-coverts more or less ferruginous; she also wants the white shoulder-spot. The young are more dusky above, with little green, and barred below, recalling, says Blyth, the coloring of *Macropygia*.

This beautiful Ground-dove is found throughout India, in forest countries, occasionally in well-wooded districts, as in Lower Bengal, extending to Assam and all the countries on the East of the Bay of Bengal, as far as, at all events, Tenasserim. It is very partial to bamboo jungle, and occurs from the level of the sea up to 3,000 feet, or perhaps higher. It feeds mostly on the ground, often on roads in forests, and bare spots under trees, walking along with a rapid motion, and allowing a moderately near approach. Its flight is very rapid. It is generally seen alone. Its voice is a low plaintive moan, or 'lowing *coo*,' as Layard calls it. Its eggs are said by Layard to be pale yellowish drab color, but Blyth says that they are merely of a less pure white than those of ordinary Pigeons or Doves. It soon becomes reconciled to confinement, and caged birds are usually for sale in Calcutta.

The Javanese species, *C. javanicus*, Gmelin, is stated to differ slightly, and extends over the greater part of the Malayan Archipelago as far as the Philippines. Blyth, however, considers it doubtfully distinct from the Indian bird. Bonaparte has *C. augusta*, from the Nicobars, also doubtfully distinct. Other species are *C. chrysochlora*, and *C. longirostris*, from Australia; and

there is a very beautiful species, *C. stephani*, from Celebes and New Guinea.

The typical *Phapeœ* are peculiar to Australia and Oceanica. Many of these live much on the ground, in rocky, barren, and sandy places, where they live like Partridges, often seeking safety, not by flight, but by running with exceeding rapidity in opposite directions, and then crouching down. The wings of some are shorter and more rounded than is usual among Pigeons; they make a loud whirring sound with them when flying, and their flight is said to be like that of a Partridge. Many nidificate on the bare ground, or on the trunk of a tree, but none lay more than two eggs. Many of them are very beautifully colored, and some are highly crested. They thus make a distinct approach to the true Gallinaceous birds.

The *Geopelieœ*, already alluded to, vary somewhat among themselves, and some of them, I think (those with only twelve tail-feathers), might be referred to the true *Turturinæ*; whilst *Ocyphaps* and others should be placed with the true *Phapeœ*.

Geopelia extends from Australia to the Malayan Peninsula, one species, *G. striata*, L., being found in Java and Malacca, and it is often brought for sale to Calcutta.

The ZENAIDINŒ, Bonaparte, are entirely an American group of Ground-doves, which have somewhat short wings, strong, lengthened, and well separated toes, and also show some analogies with the *Gallinaceœ*. Many of them run well, live in coveys, and fly, it is stated, like Partridges, with a whistling sound of their wings. They breed either on the ground, or on low trees. A few are crested as in the *Phapinœ*.

The sub-fam. CALÆNINÆ, placed as a separate family by Bonaparte, are founded on *Caloenas nicobaricus*, the Hackled Ground-pigeon, a very beautiful bird, with long hackled metallic green plumage, and a short white tail, from the Andaman, Nicobars, Mergui Archipelago, and Malayana generally. It has a stout gallinaceous body, strong bill, with a tubercle at the base, and stout legs and feet; but is said to breed on trees, though it feeds habitually on the ground on fallen fruits and berries.

The sub-family GOURINÆ, in like manner made a distinct family by Bonaparte, is founded on the Crowned-pigeons of New Guinea and adjacent islands, two species being known, *Goura coronata*, and *G. Victoriæ*. They are birds of very large size, and of a pale blue colour, with a beautiful Peacock-like crest. They have bred together in the Zoological Gardens in London.

Blyth's *Psammænas Burnesii*, founded on a drawing among Sir A. Burnes' Collections, I consider to be nothing more than a badly-drawn Dove, *T. risorius*, or allied domesticated race.

The family DIDUNCULIDÆ is represented by a single bird, the remarkable and rare *Didunculus strigirostris*, Jardine, from the Samoens Archipelago, and figured by Gould in his Birds of Australia. It has short but pointed wings, with the winglet highly developed; very large feet, and long curved claws. The bill is strong, deep, and toothed; the lower part of the tibia is naked. Bonaparte, who separates it from the true Pigeons, as the sole member of the tribe *Pleiodi*, states that it has considerable affinity with several of the *Ortyginæ*, or American Partridges. Its chief interest, however, is in its somewhat distant but intelligible approach to the extinct Dodo, from the islands of Mauritius and Rodrigues, forming the family DIDIDÆ.

This remarkable bird, of which fragments exist in some of our Museums, was called *Didus ineptus* by Linnæus. It was a very large bird, weighing 50 lbs., and of a bulky and heavy form. Its strong, large, and hooked bill caused it to be considered as related to the Vultures by some Naturalists, whilst others, from its short wings, classed it with the Ostrich. Strickland in a learned and able essay, however, pointed out its real affinities to be with the Pigeons; and this has been assented to by all systematists. Several good pictures, evidently from life, are fortunately still extant. The cere was large, the face naked, the general colour blackish gray, the wings and tail lighter. Some other allied forms are indicated by various travellers, one especially called "*Le solitaire*" by Leguat, who particularly alluded to the double crop of this bird. Notices of these will be found in Strickland and Melville's Natural History of the Dodo, and Schlegel's Monograph on the same subject.

Ord. RASORES.

Syn. *Gallinæ*, Linn.—*Gallinacei*, Vieillot—*Pulveratrices* of some —Gallinaceous birds—Game birds.

Bill short, vaulted, more or less bent down at the tip; nostrils pierced in a membrane covering the base of the bill, and protected by a cartilaginous scale; wings usually short and rounded, but ample; tail very variable, both in length and form, of from twelve to eighteen feathers; legs and feet strong, feathered to the tarsus, which is frequently spurred in the male; three toes before and one behind, the posterior one typically short, and articulated above the plane of the anterior toes, wanting in a few; nails strong, blunt, and but slightly curved.

The Gallinaceous birds, of which the domestic fowl may be taken as the type, comprise the most important and useful members of the whole class. The name of the order which I have adopted, as being in conformity with those of the other orders, and, moreover, in general use by English Ornithologists, is taken from their habit of scraping in the ground to procure their food. Unlike the last order, it contains a considerable variety of distinct types.

Taking them generally, they may be said to be birds of moderate or rather large size, heavy form, with a strong, short, and arched bill; very stout legs and feet, with the hind toe usually small and raised, and the shank furnished, in many, with a spur. In two of the families, however, the hind toe is on the same plane as the anterior ones, and in one family often absent entirely. The front toes are usually joined at their base by a short connecting web. In all cases, they seek their food on the ground; and this consists of grain, seeds, roots, buds, and insects. Many are polygamous, and in these, the male bird is larger, and adorned with much richer plumage than the female; and many are furnished with crests of various forms. The hen is usually more prolific than in any previous tribe. They are often social, in some groups even gregarious; they do not wash, but roll themselves in the dust, and almost all nestle on the ground. The

young of all are born covered with down, and run as soon as hatched. They are more or less capable of domestication, and all afford an excellent and wholesome food for man.

The head is smaller than in the birds of the preceding orders, and the neck longer; the wings are generally rounded and feeble, the sternum from its large notches affording but little space for the attachment of the pectoral muscles which, however, are well developed, giving the bird a plump appearance; and the flight, though not capable of being continued, is yet tolerably rapid and powerful, though labored, for a short distance. The bill in most is thick, short, and convex, slender in two of the families. The tail is short and even in some, rounded in others, forked in several, and lengthened and graduated in a few.

The skull of most *Rasores* is narrow, but slightly raised, and without ridges, and the bony orbit is incomplete. The cervical vertebræ are of greater number than in any of the preceding orders, varying from 13 to 15. The sternum has a double bifurcation on each side, and the fissures are so wide and deep as to give to the lateral parts of the bone the appearance of a bifurcated process. The median fissure is the deepest; the keel is short, shallow, and nearly straight; the furcula is anchylosed, and, as in most of the previous groups, is joined to the sternum below by ligaments. The tarsal spur, present in many Gallinaceous birds, and represented by a knob in others, is considered to be the representative of the thumb, and is present in no other order but in this.

The dilatation of the œsophagus, called the crop, is large but single; the gastric glands are complex, and form a complete circle; the gizzard is extremely strong, the internal coat being thick and hard; and as the birds of this order swallow small stones, gravel, &c., to assist in the trituration of the food, two callous buttons are formed in the gizzard by the constant pressure and friction. The cœca are, in general, highly developed in Gallinaceous birds; small comparatively in the more aberrant families, enormous in some, especially in the Grouse tribe. The gall bladder is believed to be always present. The trachea is of pretty uniform

diameter in most, and the muscles are exceedingly simple, so that the *Rasores* cannot modulate their voice. In most of the groups, the accessory plume to the clothing feathers is present, and is large indeed in many.

This order is remarkable for comprising so many species capable of domestication, and the common fowl, which undoubtedly takes its origin from the Red Jungle-fowl, has been domesticated from the earliest period.

Gallinaceous birds evince many interesting analogies with Ruminating animals among Mammals. The crop may be said to represent the paunch, both being simply dilatations of the œsophagus to receive the food, and thoroughly moisten it; and the cœca of both are large. They have both a low degree of intelligence, are easily domesticated, and are more prone to variation than most other tribes. The head, too, is in many of both orders, adorned with appendages, horns, and crests; and they afford more wholesome food to man than any other orders.

The *Rasores* are found over the greater part of the world; but the finest and the most typical groups, containing, too, the greatest variety of form, are from Asia. Africa possesses one group peculiar to that region, and several others nearly related to Asiatic forms. In America there are but few of the more typical groups, but two of the most aberrant divisions occur there only. In Australia they are sparingly represented by one very aberrant group, and by a very few members of the typical division. Europe and the more Northern portions of both Continents contain one fine group.

The nearest approach among Insessorial birds to the *Rasores* occurs perhaps in some of the American Cuckoos; and that remarkable bird, the *Hoazin*, *Opisthocomus cristatus*, was placed by some naturalists among those birds, but is better associated with *Penelope*, a genus of the aberrant *Cracidæ*. If that truly wonderful bird, the Lyre-bird of Australia, be really an Insessorial type, however, it must be considered to be a still closer link to the aberrant *Megapodidæ*. See further on page 494. On the other side, the *Rasores* may be said to join

the *Grallatores* through the Bustards; and the *Megapodidæ* also appear to have some affinities for the Rails.*

I shall divide the *Rasores* into the following families:—

A. Hind toe on the same plane as the anterior ones.

1. *Cracidæ*, Curassows and Guans, peculiar to America.

2. *Megapodidæ*, Mound-birds, peculiar to Australia and Malayana.

B. Hind toe raised above the level of the others, or wanting.

3. *Pteroclidæ*, Sand-grouse, chiefly from Africa and Asia, not extending into Malayana.

4. *Phasianidæ*, chiefly from Central and Southern Asia.

5. *Tetraonidæ*, Grouse and Partridges, found over all the world, but rare in Australia and South America.

6. *Tinamidæ*, mostly American, but sparingly represented in the tropical regions of the Old World, and Australia.

Blyth does not admit the separation of the *Phasianidæ* and *Tetraonidæ*, and certainly these are more nearly related to each other than either of them are to any of the other families; but this appears to be always the case with the more typical groups of any order; and, moreover, the Geographical distribution of each family differs considerably; for, whilst the *Phasianidæ* are, with one limited exception in America, and that a doubtful member, confined to Asia, and more especially to India and Central Asia, the *Tetraonidæ* are found over all the world, rare, indeed, but not unrepresented in Australia and South America. The fact of certain species of the two families occasionally breeding together, as the Pheasant and Black-grouse (insisted on by some as a proof of the close alliance of these two genera), I consider to be not more anomalous in this order than it could be of two allied genera of another order interbreeding; and I would regard it simply as an occasional peculiarity in the birds

* The subject of the external relations and affinities of various groups of animals, though long insisted on by some naturalists, was, till recently, scouted by many; but the researches and views of Darwin as to the successive development of all created beings, has given a fresh impetus to this interesting subject of enquiry.

of this group; for those who rely on it as a proof of the close affinity between such birds, would surely not assert that the affinity between the Grouse and the Pheasant was greater than that between certain species of Partridges for example, which, though living in the same localities, have not been known to breed together.

The family CRACIDÆ, comprising the Curassows and Guans, are exclusively American. They are birds of large or moderate size, with the tarsus moderately long, stout, and destitute of spurs; the toes elongated and slender, and the hind toe long, and on a level with the others. The tail is moderately long, broad, of fourteen stiff feathers, rounded in some, graduated in others. The head of a few is adorned with a crest of recurved feathers; the membrane at the base of the bill is highly colored in some; there is a solid knob at the base of the bill in others; and, in one division, the skin of the throat is naked and dilatable. The sternum has the crest very deep, and the inner notch reduced to about one-third of the outer. Several have a remarkable conformation of the trachea, which descends along the skin behind the sternum, and then, making a curve, re-enters the thorax. The supplementary plume is reduced to a mere downy tuft.

These birds dwell in forests, and live on fruit, seeds, and insects, mostly feeding on the ground. Some live in pairs, others in societies. They chiefly nestle upon trees, laying few eggs, in some cases only two; and the young perch as soon as excluded from the egg. They are easily tamed and reared, but have not been domesticated. Their flesh is said to be white, tender, and excellent. By their habits and structure, the *Cracidæ* appear to be the link that joins the Pigeons to the *Rasores*, approximating the former in the structure of the feet and sternum, as well as in their habit of nestling on trees, and laying but few eggs.

Gray divides them into *Cracinæ* and *Penelopinæ*. The former, the Curassows and Pauxis, are chiefly black, or black and white; the Guans are of various shades of brown. Near these birds, according to some, should be placed the *Cariama*, *Microdactylus cristatus*, of Geoffroy (*Dicholophus* of Illiger), located by Cuvier at the end of the Plovers. It is a large bird, as big as a Heron,

with long legs, a short hind toe raised above the ground, a moderately long, curved beak, with a wide gape; is of a brownish colour, and crested. In its anatomy it is stated to resemble Gallinaceous birds, differing in having the sternal emarginations less deep, and in a few other points. "It is," says Blyth, "essentially a Poultry-bird, with long legs."

The family MEGAPODIDÆ, or Mound-birds, belong to Australia and the Papuan province of the Malayan Archipelago, extending among the islands as far as the Nicobars. They have all very large and strong feet, with large claws, and the hind toe placed on the same plane as the others. The tail is not always developed, but, when present, consists of eighteen feathers. Some have wattles, but most are devoid of those Gallinaceous appendages. The sternum resembles in form, that of the *Cracidæ*, and the accessory plume to the body feathers is tolerably developed.

The birds of this family lay eggs of most enormous size, and of a somewhat elongated shape, with a thin shell; and they have the peculiar habit of either hatching their eggs by the heat of the sun, or by depositing them in huge masses of decaying leaves and other vegetable matter. Several pairs of birds appear to assist and lay their eggs in the same mound, and the male bird works equally with the female. The eggs are deposited at a regular depth, and at some distance from each other; and the young, when hatched, run at once. The eggs are said to be delicious eating.

Gray divides them into *Megapodinæ*, and *Talegallinæ*. The genus *Megapodius* contains a large number of species from various islands, chiefly from the more Eastern portions of the Archipelago. They are birds of plain dull greenish brown plumage, somewhat smaller than a fowl, and yet the eggs of *Megapodius nicobariensis* are as large, Mr. Blyth tells us, as those of a Peafowl. The *Leipoa ocellata* is the most beautiful bird of the group, and is called the Native Pheasant by Australian colonists. Gray places in this division a very remarkable bird, *Mesites variegata* of Is. Geoffroy, placed by others among the Rails.

Talegalla Lathami, the type of the other sub-family, is as large as a Turkey, and is called the Brush-turkey in Australia, from

the naked head and neck which are only clad with a few hair-like feathers; and it is, moreover, furnished with a large yellow wattle. It has bred in the Zoological Gardens of London. A second species, *T. Cuvierii*, occurs in New Guinea; and *Megacephalon maleo*, Temminck, is another bird of the same division found in Celebes.

The celebrated Lyre-bird of Australia, *Menura superba*, has so much the aspect of a Megapodine bird, that I cannot help considering it as not far removed from this family. Its extraordinary and unique tail consists of sixteen feathers, a number unknown among the *Insessores*, not one of which has more than twelve; its great size compared with that of the minute birds among which it is usually placed by systematists, *viz.*, the Wrens and Warblers; its strong Gallinaceous legs and feet; its habit of running with facility, which it always employs in preference to flight;—all these combine to remove this bird from the *Insessores;* and its geographic relations with the *Megapodii* must also be taken into account. It is said, however, to build a neat nest on a ledge of rock, to have the power of modulating its voice, and that the young are helpless at birth. If these habits are fully confirmed, I would still prefer placing it as a separate group next the *Megapodidæ*, with which it undoubtedly possesses considerable affinities; and, in the Darwinian theory of transmutation of species, it must have sprung directly from an ambitious *Megapode* which had desired to raise itself in the scale of Birds.

Fam. Pteroclidæ, Sand-grouse or Rock-grouse.

Syn. *Syrrhaptidæ*, Blyth.

Bill somewhat slender and compressed; wings lengthened and pointed; tarsus short, more or less plumed; feet short; hind toe rudimentary, or wanting; tail of sixteen feathers.

This is a very distinct natural family, both in structure and habits, although placed by Gray and others as a sub-family of the *Tetraonidæ*, with which the species only agree in having a feathered tarsus. The bill is slender and nearly straight in some, thicker and more curved in others; the orbits are more or less

nude; the wings long and pointed, with the first primary longest, or the first and second nearly equal. The tail varies, being short and slightly rounded in some, longer and graduated in others, with the medial feathers greatly lengthened in several, and much attenuated at the tips. The tarsus is short, rather slender in most, always feathered in front; the toes are short, either joined at the base by a small web, or soldered together. The feathers of the lower back and rump are not lengthened, and the clothing feathers are devoid, or nearly so, of the supplementary tuft.

The keel of the sternum is enormously developed, and the inner emargination wanting, or represented by a small oval foramen, as in Pigeons; the sternum itself is very narrow, and contracted in front: the furcula is short and wide, and does not possess the medial appendage. In their internal anatomy, they closely resemble other Gallinaceous birds.

The Sand-grouse or Rock-grouse, commonly called Rock-pigeons in India, are birds of remarkably rapid and powerful flight. They feed almost entirely on hard seeds, breed on the ground, laying usually three or four dull grecnish spotted eggs; and the young run as soon as hatched. They are peculiar to the warmer regions of the Old World, being particularly abundant in Africa, and in the desert regions of Asia. Some assemble in vast flocks, and fly to great distances; others take more moderate flights. The plumage of all is pale isabelline yellow, of various shades, and more or less variegated with deep brown. Two genera only are known, one common to Africa and Asia, and the other peculiar to the highlands of Central Asia.

Gen. PTEROCLES, Temminck.

Char.—Bill small, slightly arched, the sides compressed; nostrils basal, almost concealed by the frontal plumes; wings long and pointed, the first and second quills longest; tail moderate, wedge-shaped or rounded, the central feathers often lengthened; tarsi feathered in front, reticulated posteriorly; the anterior toes bare, united at their base by membrane; hind toe minute, raised; the claws short, stout, very slightly curved.

In this genus the sexes differ in plumage, the males being more uniformly colored, and the females more or less spotted or barred. They are found both in Asia and Africa, one or two species being occasionally killed in the South of Europe. These are the birds termed Rock-pigeons by sportsmen in India. Blyth* retains for them the popular name of '*Ganga*,' given them originally by Buffon, but it is by no means generally known, and I prefer calling them Rock or Sand-grouse, albeit not very closely related to the true Grouse.

They sub-divide into two groups, the one with the tail-feathers regularly graduated, restricted *Pterocles*, apud Bonaparte; the other with the medial rectrices lengthened and attenuated, *Pteroclurus*, Bonaparte.

1. With the tail-feathers regularly graduated, not elongated.

799. **Pterocles arenarius**, PALLAS.

Tetrao, apud PALLAS—TEMMINCK, Pl. col. 354 and 360—BLYTH, Cat. 1489—GOULD, Birds of Europe, pl. 257—Perdix arragonica, LATHAM.—*Bukht-titar*, *Bur-titar*, *Bakht-tit*, *Buklit*, *Bukht*, *H.*, in various parts of the country; also *Ban-chur*—*Kurmor* at Peshawur (from its cry.)

THE LARGE SAND-GROUSE.

Descr.—Male, crown and middle of the nape brownish-grey with a pinkish tinge; rest of the upper parts mingled ashy and fulvous, each feather being bluish ashy in the middle, edged with fulvous, giving a mottled appearance; greater wing-coverts plain ochreous or orange buff, and the median coverts also broadly edged with the same; quills and primary coverts dark slaty, with black shafts: tail, as the back, fulvous, with black and ashy bands; all the lateral tail-feathers tipped with white; beneath, the chin is deep chesnut, passing as a band, under the ear-coverts to the nape; and below this, on the middle of the throat, is a small triangular patch of black; the breast and sides of the neck dull ashy, tinged with fulvous, with a narrow band of black on the breast; abdomen and vent deep black, under tail-coverts black, with white margins to the feathers; tarsal plumes pale yellowish.

* Bengal Sporting Review.

Bill bluish; feet dull yellow; irides dark brown. Length 12½ to 13½ inches; wing 9¼; tail 4; tarsus 1⅛. The wings reach nearly to the end of the tail, which has the two central feathers very slightly lengthened and pointed. Weight 17 to 18¼ ounces.

The female differs in having the whole head and upper parts, with the breast, fulvous, banded with brown; the pectoral band is narrower; and between that and the black of the abdomen is unspotted; the chin is fulvous, with a narrow black edging and a few black specks; the under tail-coverts pale fulvous. She is said to be a little smaller, but one writer in the *Bengal Sporting Magazine* states that she is heavier than the male.

This fine Sand-grouse is found, within our limits, only in the N. W. Provinces and Sindh, rarely extending so low as Allahabad, tolerably abundant in the Punjab, and said to be very numerous towards the edges of the great desert. It is recorded in the *Bengal Sporting Magazine* as common in the Doab between the Ganges and Jumna, near Futteyghur, in Rohilcund, but more common west of the Jumna, near Ferozepore, in Hurriana, and in various parts of the Punjab. I have heard of its having been killed near Nusseerabad, and also in Khandeish. It is only a winter visitant to India, arriving towards the end of September, and leaving in March. It frequents extensive open sandy plains, flies in vast flocks, being said to be more abundant than *P. exustus* in those parts where it does occur. Like the others of this tribe, it goes regularly to certain spots on the banks of rivers or tanks to drink, which it does twice a day, and it is fond of basking in the sun and rolling on the sand. One writer records that he saw them about sunrise leave their roosting places among sand hills, and collect in thousands on a hard bare plain, close to where they usually drank, but that they were neither feeding nor drinking at that early hour, and came there, he suggests, for the sake of basking in the early sun's rays. It feeds on grassy plains, and also on stubble fields, and does so especially immediately after drinking.

The flight of this Sand-grouse is said to be amazingly strong and rapid, and, when roused, it flies to great distances. It is generally said to be a shy and wary bird, and difficult to approach closely, from the open nature of the country it affects. It is highly

esteemed as a game-bird, and much sought after by many sportsmen, as well for the difficulty of close access, as for its qualities on the table. It is stated that from the closeness and firmness of its plumage, it takes a good gun and heavy shot to bring it down. A writer records the great preponderance of one sex in every flock, sometimes killing seven or eight females and not one male, and *vice versâ*. The flesh is mixed brown and white on the breast, and though somewhat tough when fresh, and perhaps requiring to be skinned, it is reckoned delicious eating; indeed, one writer says that it is the finest game bird for the table in India. Shooting them from a hole dug in the ground near their drinking spots is said to be a very deadly way of making a good bag, and this I can readily believe. It is caught in the neighbourhood of Peshawur and other places in horse-hair nooses.

This Sand-grouse is common in Afghanistan, where it is called *Tuturuk* and *Boora-hurra*, or black breast, and in various other parts of Central and Western Asia, particularly in Arabia, where it is seen in flocks of millions, according to Col. Chesney; also in Northern Africa, and the South of Europe, especially in Spain, where it is said to be tolerably abundant in winter, and to be often brought to the market at Madrid. It breeds in Central Asia, and also in Africa according to Tristram, and even in Spain. This last writer states the rather strange facts that it chiefly feeds towards sunset, and that it is almost domesticated in the Court-yards of the Arabs. He also says that the flesh is white and dry. Can he be writing of the same bird?

800. **Pterocles fasciatus**, Scopoli.

Tringa, apud Scopoli—Blyth, Cat. 1490—Gould, Birds of Asia, pt. II. pl. 14—Jerdon, Ill. Ind. Orn. pl. 10 and 36—P. quadricinctus, apud Jerdon, Cat. 271—*Handeri.* H. in the South—*Boot-bur*, H. in the N. W.—*Sunda polanka*, Tel.

The Painted Sand-grouse.

Descr.—Male, general ground colour bright fulvous yellow, the sides of the head, neck and breast, and shoulder of the wings plain and unspotted; the back, scapulars, tertiaries, and tail, banded

with deep brown; a narrow white band on the forehead, then a broadish black band, succeeded by another narrow white one, and then a narrow black band, widening behind the eye, and ending in a white spot; the occiput and nape with black streaks; quills brown-black, with narrow pale edgings; the median and greater coverts of the wings and some of the secondaries broadly banded with inky black, edged with white; a triple band separates the fulvous of the breast from the abdomen, the first maronne, the second creamy white, and the third unspotted chocolate brown, which is the ground colour of the abdominal region, vent, and under tail-coverts, each feather being tipped with white.

Bill red; orbitar skin lemon yellow; irides dark brown; feet dull yellow; claws reddish. Length 10 inches; extent 21; wing 7; tail $3\frac{1}{4}$; tarsus $1\frac{1}{8}$; weight 7 to 8 oz.

The female differs in wanting the black and white bands on the head, the pectoral bands, and the inky-black and white bars on the wings, the whole upper surface, the sides of the neck, breast, wings, and tail, being fulvous mixed with rufous, and finely barred with black; the chin, throat, ear-coverts, and some of the greater wing-coverts are unspotted fulvous; the lower part of the breast, and the whole abdominal region very finely barred with chocolate black and creamy white.

This very beautiful Sand-grouse has been generally confounded with an African bird, *P. quadrinctus* of Temminck, from which it differs in several particulars, the chief distinction being, according to Strickland, in the African bird having the feathers of the back, scapulars, tertiaries, and greater coverts, deep glossy black.

It is found over the greater part of India, except in Malabar and Lower Bengal, but it is by no means abundant any where, and is apparently not found out of India. In some districts it is stated to occur in the rains only. I have seen it in the Carnatic, the Deccan, and Central India, and it is not unknown in the N. W. Provinces, and Adams records it as pretty common in the low jungles around the base of the Sewalik range, Punjab. It affects chiefly bushy and rocky hills, and, unlike any others of its genus, is often found in tolerably thick cover. It is found generally in pairs, occasionally towards the end of the rains in parties of eight to

ten; when flushed, rises with a low chuckling call, takes a short flight at no great elevation, and drops into cover again. I have very rarely seen it among rocks, where there was little or no jungle. I have had the eggs brought me, very cylindrical in form, of a dull earthy green with a few dusky spots. On several occasions I have observed in this species crepuscular, if not nocturnal habits. On one of these several flew round a field on which I was encamped, near the Nerbudda, late one evening when nearly dark, alighting every now and then, and again resuming their flight, which, being particularly noiseless, led me to take it for some kind of *Caprimulgus* at first; and more than once I again noticed similar habits.

P. Lichtensteini is not unlike *P. fasciatus*, but differs in being larger, with the nape, front and sides of neck, and the fore part of the wing, prettily variegated. It is common in Arabia, and may occur as a straggler in Sindh, or in the Western Punjab.

With the medial tail-feathers greatly lengthened (*Pteroclurus*, Bonap.)

801. Pterocles alchata, Linnæus.

Tetrao, apud Linnæus—Blyth, Cat. 1491—Tet. chata, Pallas—Gould, Birds of Europe, pl. 258—'Solitary Rock-pigeon' of some sportsmen.

The large Pin-tailed Sand-grouse.

Descr.—Forehead and supercilia rusty fulvous, with a black stripe behind the eye; top of the head and nape fulvous with black bands; the general hue above, including the scapulars and shoulders of the wings, is fulvous olive or greyish olive, shaded with fuscous; the scapulars with a few black spots; rump and upper tail-coverts bright pale fulvous with narrow black bars; lesser and median wing-coverts maronne, white tipped; secondary coverts fulvous with black lunules; greater coverts and primaries slaty blue on their outer webs, brown internally; tail banded yellow and black; the median pair blackish on their attenuated portion; the outer feathers greyish, white tipped and edged; beneath, the chin and throat are black, edged with rusty; lores and face rufous

yellow, with a blackish space round the eyes; breast pale fulvous, with a double black band, each of them narrow; abdomen, vent, and lower tail-coverts white, the latter slightly black barred; tarsal plumes whitish.

Bill very stout, horny brown; irides brown; feet plumbeous. Length about 15½ inches; wing 8; tail 6½; tarsus 1¼.

The female differs in having the upper plumage barred with black and fulvous, with some dusky ashy spots on the back and scapulars; the lesser and median wing-coverts ashy, with oblique rufous and black lunules; the throat white; a broad blackish demi-collar on the neck, followed by an ashy band tinged with rufous. The median tail-feathers are stated to be nearly as long as in the male bird.

This species of Sand-grouse is a well known inhabitant of Northern Africa, Western Asia, and the South of Europe, especially in Spain, Sicily, the Levant, &c.; and it extends through Central Asia into the Punjab and Sindh. It is, however, a rare bird comparatively in India, only a few finding their way across the Sutlej. It is recorded to have been killed at Hansi. I presume that like *P. arenarius* it is migratory to this country, and only found in the cold season. It is a very beautiful bird, and the bill is much thicker and stronger than that of any other of the genus.

It has a peculiar call, something like *kaa-kia*, said to be not unlike the call of the Jackdaw; it flies in flocks of from ten to seventy or more, and is said to be very shy and wary, and more difficult to approach than the large Sand-grouse. Its specific appellation is taken from its Arabic name *El-chata* or *El-katta*, which however is also applied to *P. arenarius*. I have seen no notice of any native name in this country for this species, and imagine that it is called by the same names, as *P. arenarius* and *P. exustus*. From this last it may be at once distinguished by its somewhat larger size, stronger bill, and white belly. It breeds among rocks in Central and Western Asia, Northern Africa and the South of Europe, laying four or five eggs of a reddish grey colour, with brownish spots.

It is said to swarm in countless numbers in Palestine, and Mr. Blyth believes, and with justice, that this bird rather than the

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Coturnix communis is the 'Quail' of the Israelites. Col. Chesney, indeed, writes of it as a kind of Quail about the size of a Pigeon, which at times literally darkens the air with its numbers.

802. Pterocles exustus, Temminck.

Pl. Col. 354, 360—Gould, Birds of Asia, pt. II. pl. 13—Blyth, Cat. 1492—Jerdon, Cat. 270—Sykes, Cat. 161—*Bar-titar*, *Bakht-titar*, *Kumar-tit*, H.—*Kuhar*, H. in the N. W. P.—*Jam polanka*, Tel.—*Kal koudari*, Tam.—Rock-pigeon of sportsmen in India.

The Common Sand-grouse.

Descr.—Male, general colour fulvous isabelline, brighter and more yellow about the lores, face, and chin, and mixed with dusky greenish on the back, wings, and upper tail-coverts; primaries black, the tips of all, except the first three, white, broader on the inner web; a longitudinal median line on the wing, formed by some of the coverts and secondaries being brighter buff; tail with the central pair of feathers elongated and highly attenuated, isabelline yellow; the lateral feathers deep brown, edged and tipped with pale fulvous; a narrow black band in the breast; abdomen deep chocolate brown (burnt or singed colour, hence *exustus*), paling on the vent, and the under tail-coverts creamy white, as are the tarsal plumes.

Bill leaden; orbits lemon yellow; irides dark brown; feet plumbeous. Length 13 inches; wing 7½; tail 5½ to 6; tarsus 1⅛. Weight 8 to 9 oz.

The female has the whole upper plumage, including the tail-feathers (except a plain bar on the wing formed by the greater coverts) fulvous, closely barred with deep brown; also the space between the pectoral band and the abdomen; neck and breast unspotted dingy isabelline, and abdomen as in the male. The central rectrices are not elongated.

This is the most common and abundant species of Sand-grouse throughout India, being found in every part of the country, except the more wooded portions, and never occurring in forest districts. It is, therefore, quite unknown in Malabar, in the wooded districts of Central India, and in Lower Bengal; and neither this, nor any

of the previous species, as far as is known, occur to the eastwards, in Assam, Sylhet, or Burmah. Out of India, it is common through great part of Central and Western Asia, and Northern Africa, and it is stated to have occurred rarely in Europe.

This Sand-grouse frequents the bare open plains, whether rocky or otherwise, and is very partial to ploughed lands and bare fallow fields. It feeds chiefly in the morning, and between 8 and 9 A. M. goes to drink at some river or tank, at which, in some parts of the country, thousands assemble, and they may be seen winging their way in larger or smaller parties from all quarters, at a great height, uttering their peculiar loud piercing call, which announces their vicinity to the sportsman long before he has seen them. They remain a few minutes at the water's edge, walking about and picking up fragments of sand or gravel, and then fly off as they came. In the hot weather, at all events, if not at all seasons, they drink again about 4 P. M. When they are seated on bare sandy or rocky ground, they are most difficult to observe, from the similarity of their color to the ground; sometimes they can be aproached with ease near enough to get a good shot, at other times, especially if in large flocks, they are shy and wary. A small flock or single birds can often be approached very close by walking rapidly, not straight, but gradually edging towards them; and, in this way, I have often walked up to within two or three yards of them. They feed on various hard seeds, especially on those of various *Alysicarpi*, *Desmodium*, &c., as well as on grass seeds or grain.

These Sand-grouse breed in the Deccan and Southern India from December to May, and in Central India still later. In some parts of the country, as at Mhow and Saugor, most of them leave the district after breeding in July, and do not return till the end of the rains. The eggs are laid on the bare ground, three or four in number, of cylindrical form, nearly equally thick at both ends, of a greenish stone colour, thickly spotted with grey and brown.

This bird, if kept long enough, is very excellent eating, though the flesh is somewhat hard and tough, but with a high game flavour; and the young birds, when nearly full grown, are most excellent.

A somewhat allied species, *Pterocles senegallus*, Lin., of which *P. guttatus*, Licht., is the female, is common in Eastern Africa and Arabia, &c., and has been figured by Gould in his Birds of Asia, pt. III. pl. 6. Mr. Blyth was assured by a sportsman to whom he showed specimens, that this species occurred in Sindh, and was even more common there than *P. exustus*; however, as no Indian examples have been examined, I cannot at present include it among the 'Birds of India.' The male resembles *P. exustus*, but is somewhat larger; and both sexes have the throat and sides of the neck very bright pale orange buff; above and behind this colour the male has the sides of the head and nape of a pure ash-grey; there is no black bar on the breast, and the middle of the abdomen only is sooty black. The female is curiously dotted over with dusky grey upon a light buff, almost cream-coloured ground.

Several other species of *Pterocles* occur in Africa, one of which, *P. coronatus*, has been found in Western Asia, and is figured by Gould in his Birds of Asia, pt. III. pl. 7.

The genus *Syrrhaptes* differs from *Pterocles* in having the feet much smaller, joined together at the base, feathered to the claws, and no hind toe; the first two wing primaries, too, are lengthened and attenuated. It was founded on *Tetrao paradoxus*, of Pallas, a very handsome bird, inhabiting the desert regions of Central Asia, which, strange to say, was lately killed in England, a notice of which, with a very beautiful figure, appeared in the Ibis for 1862.

A second species has been found by several of our Indian sportsmen just across the Himalayas, but not hitherto on the Indian side, *Syrrhaptes Tibetanus*, Gould. It has been observed chiefly in Ladak, is said to occur in small parties of nine or ten; and to have a loud cry *yák, yák, yák*. It has the upper parts and breast minutely mottled with zig-zag markings, the throat and sides of the neck ochre yellow; the wings sandy yellow with some black markings on the scapulars; and the lower parts white. Length 20 inches; wing 11; tail 7½.

We next come to the more typical *Gallinacei*, with the supplementary plume well developed.

Fam. PHASIANIDÆ.

Bill moderate, strong, vaulted, the tip of the upper mandible produced over that of the lower, sides more or less compressed; nostrils apart; wings moderate or short, rounded; tail (typically) lengthened and broad, of from twelve to eighteen feathers; tarsus moderate or long, usually spurred in the males; toes long, anterior ones united by a short membrane at the base; the hind toe raised, short, sometimes resting on the ground by its point.

This family, as here restricted, comprises the Pea-fowls, Pheasants, Jungle-fowl, and Spur-fowl, all of which are peculiar to Asia, and more especially to India, including Burmah and Malayana. Some include in this family the Turkeys of America, but I prefer placing them as a distinct, it may be a subordinate group. As distinguished from the next family, *Tetraonidæ*, they are characterized by a generally more lengthened bill, the nostrils always apart, the face more nude, the head often furnished with variously formed crests of feathers, or of nude skin, or with lappets and wattles, in some cases of erectile tissue, the tail typically is longer, and more commonly raised; and the tarsus perhaps more generally lengthened, and furnished with spurs. In their habits they more habitually frequent forests, jungles, and thick covert; whilst the *Tetraonidæ* more affect open grass ground, fields, and sometimes low jungle. Most of the Pheasants, too, perch freely on trees, and roost habitually thereon, this habit being the exception among the Grouse and Partridges. On these grounds, as well as on that of different geographical distribution, I prefer retaining the two families distinct, in accordance with most Ornithologists, notwithstanding the fact of certain genera of each family interbreeding with each other.

The Indian *Phasianidæ* may be popularly divided into Pea-fowl, Pheasants, Jungle-fowl, and Spur-fowl; and, although the limits of each are somewhat vague, I shall give these groups the rank of sub-families in accordance with some of our systematic Works on Ornithology.

Sub-fam. PAVONINÆ,—Pea-fowl.

Syn. *Pavonidæ*, Bonap.

Plumage more or less ocellated. Inhabit India and Burmah with Malayana, not extending into the Himalayas.

Gen. PAVO, Linnæus.

Char.—Bill lengthened, slender; the nareal portion large; nostrils linear; head ornamented with an erect crest of feathers of a peculiar structure; orbitar region naked; tail moderately long, of eighteen feathers; feathers of the back and upper tail-coverts of great length, long, surpassing the tail, and beautifully ocellated; tarsi rather long, spurred in the male.

The Peacock is too well known to require any remarks on his general structure and appearance. But two species are known, the one inhabiting India Proper, the other Assam, Burmah, and parts of Malayana.

803. Pavo cristatus, LINNÆUS.

Pl. enl. 433, 434—BLYTH, Cat. 1449—JERDON, Cat. 265—SYKES, Cat. 146—*Mor*, *Mhor*, H. Beng. and Mahr. also *Manjur*, H. —*Nimili*, Tel.—*Myl*, Tam.—*Mab-ja*, Bhot.—*Mong-yung*, Lepch.

THE COMMON PEACOCK.

Descr.—Male, head, neck, and breast rich purple, with gold and green reflections; back green, the feathers scale-like, with coppery edges; the wings, with the inner-coverts, including the shoulder, white, striated with black; the middle coverts deep blue; the primaries and tail chesnut; abdomen and vent black, the train chiefly green, beautifully ocellated; the thigh coverts yellowish grey; head with a crest of about 24 feathers, only webbed at the tip, and green with blue and gold reflections.

Bill horny brown; naked orbits whitish; irides dark brown; legs horny brown. Length to the end of the true tail 3½ to 4 feet; wing 18 inches; tail 24; the long train sometimes measures 4½ feet and even more.

The Peahen is chesnut brown about the head and nape, the neck greenish, edged with pale whity brown; the upper plumage light hair-brown, with faint wavings, increased on the upper tail-

coverts; quills brown; some of the wing-coverts mottled dusky and whitish; tail deep brown with whitish tips; chin and throat white; breast as the neck; abdomen white, with the lower parts and under tail-coverts brown.

Length 38 to 40 inches; wing 16; tail 14. The crest is shorter and duller in its tint than in the male.

The Pea-fowl is too well known to require a more ample description. It inhabits the whole of India Proper, being replaced in Assam and the countries to the East by another species. It frequents forests, and jungly places, more especially delighting in hilly and mountainous districts; and, in the more open and level country, wooded ravines and river banks are the never failing resort. It comes forth to the open glades and fields to feed in the morning and evening, retiring to the jungles for shelter during the heat of the day, and roosting at night on high trees. It ascends the Neilgherry and other mountain regions in Southern India to 6,000 feet or so of elevation, but it does not ascend the Himalayas, at all events in Sikim, beyond 2,000 feet. In many parts of the country it is almost domesticated, entering villages and roosting on the huts, and it is venerated by the natives in many districts. Many Hindoo temples have large flocks of them; indeed, shooting it is forbidden in some Hindoo States. The Pea-fowl breeds, according to the locality from April till October, generally in Southern India towards the close of the rains, laying from 4 to 8 or 9 eggs in some sequestered spot. The Peacock during the courting season raises his tail vertically, and with it of course the lengthened train, spreading it out and strutting about to captivate the hen birds; and he has the power of clattering the feathers in a most curious manner.

It is a beautiful sight to come suddenly on twenty or thirty Peafowl, the males displaying their gorgeous trains, and strutting about in all the pomp of pride before the gratified females. The train of course increases in length for many years at each successive moult, but it appears to be shed very irregularly.

Though it cannot be said to be a favorite game with Sportsmen in India, yet few can resist a shot at a fine Peacock whirring past

when hunting for small game; yet Pea-chicks are well worth a morning's shikar for the table, and a plump young Peahen if kept for two or three days, is really excellent. An old Peacock is only fit to make soup of. A bird merely winged will often escape by the fleetness of its running. They generally roost on particular trees, and by going early or late to this place, they can readily be shot. Pea-fowl are easily caught in snares, common hair-nooses, and are generally brought in alive, for sale in numbers, in those districts where they abound. In confinement they will destroy snakes and other reptiles, and in their wild state feed much on various insects and grubs, also on flower buds and young shoots, as well as on grain.

The Burmese Pea-fowl, *Pavo muticus*, Linnæus, (*P. assamicus*, McLelland,) notwithstanding the Linnæan name, has spurs; its crest is quite different in structure from that of *cristatus*, being composed of about ten or more slender barbed feathers. Though not so showy as the common Peacock, it is, perhaps, a still more beautiful bird, having more green and gold and less blue in its plumage. It is found in all the countries to the Eastwards, from Assam southwards through Burmah to Malacca, and many of the Islands. Hybrids between the two species are not rare in Aviaries.

Near the Pea-fowl should be placed the genus *Polyplectron* or Pea-pheasants, often called Argus Pheasants. The males are very beautifully adorned with green or pink ocelli over the body, wings, and tail, which consists of sixteen feathers. The tarsi are armed with two or even three spurs in the male. They are peculiar to the Indo-Chinese countries, and Malayana, one species *Polyplectron tibetanum*, (*chinquis*, Temminck, Pl. col. 539), occurring in the hilly regions of upper Assam, Sylhet, Tipperah and Chittagong, extending through Burmah to Tenasserim. The female is *P. lineatum* figured in Hardwicke, Ill. Ind. Zool. Another species, *P. bealcaratum*, L., is found in Malacca, Sumatra, &c.; and a very beautiful species, *P. napoleonis*, Massena, (*emphanum*, Temm.) is probably from Borneo. A fourth species without spots, *P. chalcurus* T., has been separated by Bonaparte as *Chalcurus*. It appears to me that *Perdix concentrica* of Gray, in

Hardwicke's Ill. Ind. Zool., is a bad figure of some female *Polyplectron*.

With Bonaparte I would class here, rather than with the Pheasants, the real Argus Pheasant, *Argusanus giganteus*, Temm., (*Pavo argus*,) L., of the Malay Peninsula as far north as Mergui, Sumatra, and some of the Islands. The race from Borneo is stated to differ somewhat. In this magnificent bird the secondary quills are longer than the primaries, and all beautifully covered, as well as the tail, with fine ocelli. The tail consists of only twelve feathers. It does not occur in Sylhet as stated by Hardwicke in his MSS. in the British Museum.

Sub-fam. PHASIANINÆ, Pheasants.

Tail typically long, with the central feathers sometimes of great length; plumage rarely ocellated; tail in most of eighteen feathers; head more or less crested.

Among the Pheasants, I include the Monaul, the Horned Pheasants, the Pucras, the true Pheasants, the Gold and Silver Pheasants, the Snow Pheasants, the Blood Pheasants, and the Kalij Pheasants, which last form the link to the next group, the Jungle-fowl and Fire-backs. These are all inhabitants of the highlands of Central Asia, the Himalayas and China, and do not (with the exception of one member of the *Kalij* group) extend into the Burmese province, and not at all into Malayana.

I shall commence the series with the Monaul, which, by the form of its crest and its rich metallic colours, approaches nearest to the Peacocks.

Gen. LOPHOPHORUS, Temminck.

Syn. *Monaulus*, Vieillot—*Impeyanus*, Lesson.

Char.—Head with a Peacock-like crest of several feathers, bare on the shaft, feathered and lanceolate at the tip only; orbits bare; bill somewhat lengthened, the tip projecting and hooked; tarsus of the male with one rather short spur; tail short, nearly even, or slightly rounded, of sixteen feathers.

Plumage rich metallic green and gold, with a rufous tail.

This genus consists of but one species, the most gorgeous perhaps of the family, whose colors and metallic brilliancy rival those of the Humming-birds.

804. Lophophorus Impeyanus, Latham.

Phasianus, apud Latham—Blyth, Cat. 1477—L. refulgens, Temm.—Gould, Cent. Him. Birds, pl. 60 and 61—Gould, Birds of Asia, pt. II. pl. 7—*Monal, Ghur Monal, Rutnal—Ratkap, Rattea-kowan*, in various dialects in the N. W. Himalayas. *Lont* (the male), *Ham* (the female) in Cashmere—*Murgh-i-zari* or the Golden Fowl of some—*Phodong-pho*, Lepch.—*Chamdong*, Bhot.

The Monaul Pheasant.

Descr.—Male, head with the crest and throat bright metallic green; back of the neck brilliant iridescent purple, passing into bronzy green, and all with a golden gloss; upper part of the back and wing-coverts, rump, and upper tail-coverts, richly glossed with purple and green, the latter colour prevailing on the wings and furthest tail-coverts, and the purple on the back and rump; middle of the back white; quills black; tail cinnamon rufous; the whole lower surface black, glossed on the throat with green and purple, dull and unglossed elsewhere.

Bill dark horny; naked orbits blue; irides brown; legs dull ashy green. Length 27 to 29 inches; extent 36; wing 11½ to 12; tail 8½; tarsus 2¾; middle toe and claw 3. Weight 4½ lbs.

The female has the chin and throat white; the whole of the rest of the body pale buffy brown, with dark brown spots, bars, and undulations; the primaries blackish, the secondary quills barred black and rufous; tip of the tail and outer edges of the last tail-coverts whitish.

Length about 24 inches; wing 11; tail 7½.

The young males for the first year nearly resemble the females, but may easily be distinguished by the white feathers on the chin and throat being spotted with black; the vent feathers are also marked with the same, and the whole plumage is darker. When changing their plumage to the adult, they appear spotted all over

with glossy metallic green. In the second year, they are stated to assume the adult plumage, with the curious exception, according to Mountaineer, of the 7th primary which retains the brown for another year.

This splendid Pheasant is found throughout the whole extent of the Himalayas, from the hills bordering Affghanistan as far east as Sikim, and probably also to Bootan. It occurs from a level of 6,000 or 7,000 feet in winter, to the limits of the wooded regions, and is most numerous at high altitudes, and in the interior of the hills. In Sikim it is not found at a lower level than 10,000 feet, and has not been found in British territory, but in the interior, at high elevations, it is not very rare, though apparently not so common as in the N. W. Himalayas. For an admirable and full account of its habits, I take the liberty of transcribing a great portion of Mountaineer's remarks in the *Bengal Sporting Review*, New Series, vol.

"The Monaul is found on almost every hill of any elevation, from the first great ridge above the plains to the limits of the wooded district, and in the interior it is the most numerous of the game birds. When the hills near Mussooree were first visited by Europeans, it was found to be common there, and a few may still be seen on the same ridge eastwards from Landour. In summer, when the rank vegetation which springs up in the forest renders it impossible to see many yards around, few are to be met with, except near the summits of the great ridges jutting from the snow, where in the morning and evening, when they come out to feed, they may be seen in the open glades of the forest and on the green slopes above. At that time no one would imagine they were half so numerous as they really are; but as the cold season approaches, and the rank grass and herbage decay, they begin to collect together, the wood seems full of them, and in some places hundreds may be put up in a day's work. In summer the greater number of the males and some of the females ascend to near the limits of the forests where the hills attain a great elevation, and may often be seen on the grassy slopes a considerable distance above. In autumn they resort to those parts of the forests where the ground is thickly covered with

decayed leaves, under which they search for grubs; and descend lower and lower as winter sets in, and the ground becomes frozen or covered with snow. If the season be severe, and the ground covered to a great depth, they collect in the woods, which face to the south or east, where it soon melts in the more exposed parts, or descend much lower down the hill, where it is not so deep, and thaws sufficiently to allow them to lay bare the earth under the bushes and sheltered places. Many, particularly females and young birds, resort to the neighbourhood of the villages situated up in the woods, and may often be seen in numbers in the fields. Still in the severest weather, when fall after fall has covered the ground to a great depth in the higher forests, many remain there the whole winter; these are almost all males and probably old birds. In spring, all in the lower parts, gradually ascend as the snow disappears.

"In the autumnal and winter months, numbers are generally collected together in the same quarter of the forest, though often so widely scattered that each bird appears to be alone. Sometimes you may walk for a mile through a wood without seeing one, and suddenly come to some part, where, within the compass of a few hundred yards, upwards of a score will get up in succession; at another time, or in another forest, they will be found dispersed over every part, one getting up here, another there, two or three further on, and so on for miles. The females keep more together than the males; they also descend lower down the hills, and earlier and more generally leave the sheltered woods for exposed parts or the vicinity of the villages on the approach of winter. Both sexes are often found separately in considerable numbers. On the lower part, or exposed side of the hill, scores of females and young birds may be met with, without a single old male; while higher up, or on the sheltered side, none but males may be found. In summer they are more separated, but do not keep in individual pairs, several being often found together. It may be questioned whether they do pair or not in places where they are at all numerous; if they do, it would appear that the union is dissolved as soon as the female begins to sit, for the male seems to pay no attention whatever to her whilst sitting, or to the young brood

when hatched, and is seldom found with them. The call of the Monaul is a loud plaintive whistle, which is often heard in the forest at daybreak or towards evening, and occasionally at all hours of the day. In severe weather, numbers may be heard calling in different quarters of the wood before they retire to roost. The call has a rather melancholy sound, or it may be, that as the shades of a dreary winter's evening begin to close on the snow-covered hills around, the cold and cheerless aspect of nature, with which it seems quite in unison, makes it appear so.

"From April to the commencement of the cold season, the Monaul is rather wild and shy, but this soon gives way to the all-taming influence of winter's frosts and snows; and from October it gradually becomes less so, till it may be said to be quite the reverse; but as it is often found in places nearly free from underwood, and never attempts to escape observation by concealing itself in the grass or bushes, it is perhaps sooner alarmed, and at a greater distance than other Pheasants, and may therefore appear at all times a little wild and timid. In spring, it often rises a long way in front, and it is difficult to get near it when it again alights, if it does not at once fly too far to follow; but in winter, it may often be approached within gunshot on the ground, and when flushed it generally alights on a tree at no great distance, and you may then walk quite close to it before it again takes wing.

"In the forest, when alarmed, it generally rises at once without calling or running far on the ground; but on the open glades or grassy slopes, or any place to which it comes only to feed, it will, if not hard pressed, run or walk slowly away in preference to getting up; and a distant bird, when alarmed by the rising of others, will occasionally begin and continue calling for some time while on the ground. It gets up with a loud fluttering and a rapid succession of shrill screeching whistles, often continued till it alights, when it occasionally commences its ordinary loud and plaintive call, and continues it for some time. In winter, when one or two birds have been flushed, all within hearing soon get alarmed; if they are collected together, they get up in rapid succession; if distantly scattered, bird after bird

slowly gets up ; the shrill call of each as it rises alarming others still further off, till all in the immediate neighbourhood have risen. In the chesnut forests where they are often collected in numerous bodies, where there is little underwood, and the trees, thinly dispersed and entirely stripped of their leaves, allow of an extensive view through the wood, I have often stood till twenty or thirty have got up and alighted on the surrounding trees, then walked up to the different trees, and fired at those I wished to procure, without alarming them, only those close being disturbed at each report. In spring they are more independent of each other's movements, and though much wilder, are more apt to wait till individually disturbed. When they alight in the trees, and are again flushed, the second flight is always a longer one. When repeatedly disturbed by the sportsmen or shikaries, they often take a long flight in the first instance. The seasons also have great influence over them in this respect, as well as in their degree of tameness or wildness. In spring, when the snow has melted in every part of the forest, and they have little difficulty in procuring an abundance of food, they appear careless about being driven from any particular spot, and often fly a long way ; but in winter, when a sufficiency of food is not easily obtained, they seem more intent on satisfying their hunger, and do not so much heed the appearance of man. The females appear at all times much tamer than the males. The latter have one peculiarity, not common in birds of this order : if intent on making a long flight, an old male after flying a short way, will often cease flapping his wings, and soar along with a trembling vibratory motion at a considerable height in the air, when, particularly if the sun be shining on his brilliant plumage, he appears to great advantage, and certainly looks one of the most magnificent of the Pheasant tribe.

" In autumn, the Monaul feeds chiefly on a grub or maggot which it finds under the decayed leaves ; at other times on roots, leaves, and young shoots of various shrubs and grasses, acorns and other seeds and berries. In winter, it often feeds in the wheat and barley fields, but does not touch the grain ; roots and maggots seem to be its sole inducement for digging amongst it. At all times and in all seasons, it is very assiduous in the operation of digging, and con-

tinues at it for hours together. In the higher forests, large open plots occur quite free from trees or underwood, and early in the morning or towards evening, these may often be seen dotted over with Monauls, all busily engaged at their favourite occupation.

"The Monaul roosts in the larger forest trees, but in summer when near or above their limits, will often roost on the ground in some steep rocky spot. The female makes her nest under a small overhanging bush or tuft of grass, and lays five eggs of a dull white, speckled with reddish brown; the chicks are hatched about the end of May. The flesh is considered by some as nearly equal to Turkey, and by others as scarcely eatable. In autumn and winter, many, particularly females and young birds are excellent, and scarcely to be surpassed in flavour or delicacy by any of the tribe; while from the end of winter most are found to be the reverse. They are easily kept in confinement, and I would imagine, might, without much difficulty, be naturalized in Europe."

The Monaul has lately bred in the Zoological Gardens of London, as well as, some years previously, in those of the Earl of Derby. The latter, in a communication to Mr. Gould, stated that one female laid thirteen or fourteen eggs on one occasion; and that the eggs were very pale buff, with small spots of reddish brown, very like those of the Capercailzie. They were figured in Jardine's tributions to Ornithology for 1850.

Near the Monaul perhaps should be placed the Snow-pheasants, *Crossoptilon*, with two species, *C. auritum*, Pallas, and *C. tibetanum*, Hodgson. These beautiful birds are white, with the tail glossy blue green, and are both from the highlands of Central Asia. Gray, in his List of Genera, places them between *Pucrasia* and *Gallophasis*, but Bonaparte places them together in his section *Lophophoreæ* of his *Lophophorinæ*.

Next come the Horned-pheasants of the Himalayas and Central Asia.

Gen. CERIORNIS, Swainson.

Syn. *Tragopan*, Cuvier—*Satyra*, Lesson—*Ceratornis*, Cabanis.

Char.—Bill rather short, head with two small erectile fleshy processes (horns) terminating the naked orbits; crown of the head

crested; throat with a naked expansile gular wattle; tail short, broad, of eighteen feathers; tarsi short, robust. Plumage of the male more or less red, with numerous white spots.

These are birds of rather large size and heavy form, with short tails, found only in the higher regions of the Himalayas and Central Asia. The type was described originally by Linnæus as a Turkey, from the naked wattles on the head and throat; and Gould considers it to have considerable affinity for that genus, together with some characters that indicate a relationship to *Namida*, and even to *Francolinus* (*Galloperdix ?*). Gray places them among the Jungle-fowl; but from their geographical distribution, I prefer keeping them among the Pheasants. Four species are now known, two of which are peculiar to the Himalayas, and two to the Tibetan side of that range. They are popularly called Argus Pheasants by Sportsmen.

Ceriornis satyra, Linnæus.

Meleagris, apud Linnæus—Gould, Cent. Him. Birds., pl. 62—Blyth, Cat. 1453—Satyra Lathami, and S. Pennantü, Gray, Hardwicke, Ill. Ind. Zool., pl. 49 and 51—S. cornuta, Gray—*Tirriak-pho*, Lepch.—*Bup*, Bhot.—*Dafia*, Beng.—'Monaul' popularly by Europeans at Darjeeling, or Argus Pheasant.

The Sikim Horned Pheasant.

Descr.—Forehead, nape, and sides bordering the nude parts, black; crest formed of slender hair-like feathers, black in front, red behind; back, rump, wings, and upper tail-coverts brown, finely barred with black, with a white ocellus, which on the wing-coverts and the sides of the rump are inserted on a maronne red spot at the tip of each feather; quills dark brown, with dark rufous bands and bars; shoulders of wings bright fiery red, unspotted; the sides of the upper tail-coverts olive fulvous, with black tips; tail black, with numerous narrow dark rufous bars, more marked at the base and on the sides; sides and back of neck, breast, and all the lower parts, fine rich crimson red, with white spots mostly edged with deep black.

Bill brown; orbits, erectile horns, and neck and throat, fine blue, here and there spotted with orange; the skin of the throat

loose at the sides, dilatable, wrinkled, and with a few scattered hairs; when excited of a deeper blue with crimson bars; irides deep brown; legs yellowish brown. Length about 27 inches; wing 11; tail 11; tarsus 3¼; weight about 4½ lbs.

The female is brown throughout with dark mottlings, and with some faint white lines on the upper back, and wing-coverts, being the representative of the white ocelli of the male; quills chesnut banded with dusky; chin albescent; beneath, the white lines increase in size from the breast, and are large on the belly and vent.

Length about 24 inches; wing 10; tail 10. Young males resemble females; and when in a state of change, have red spots on the neck, wings and lower parts. In winter, after the breeding season is over, the naked parts about the head and neck diminish in size, or almost disappear.

This species of Horned-pheasant is found in the Nepal and Sikim Himalayas, and was the first species known to naturalists. It appears to be very abundant in Nepal, and it is not rare in Sikim at considerable elevations. I have seen it at about 9,000 feet in spring, and in winter it descends to between 7,000 and 8,000 feet in the vicinity of Darjeeling, and perhaps lower in the interior. It is frequently snared by the Bhoteeas and other Hill-men, and brought alive for sale to Darjeeling. Its call, which I have heard in spring, is a low deep bellowing cry, sounding like *waa-ung, waa-ung*. Its general habits are no doubt similar to those of the next species which have been more accurately observed.

806. **Ceriornis melanocephala**, Gray.

Satyra apud Gray—Blyth, Cat. 1452—Tragopan Hastingii, Vigors—Gould, Cent. Him. Birds, pl. 63,64,65—Phas. nipalensis, Gray (the female)—Hardwicke, Ill. Ind. Zool. 1. pl. 46,47,48 and 2 pl. 40—*Jewar*, or *Jowar, Jowahir, Jwyr*, as variously written, in the N. W. Himalayas, *Jahgi* at Simla—*Lungi*, in Kumaon —*Sing monal, i. e.* the Horned Monaul,—'*Argus Pheasant*' of Europeans at Simla and elsewhere.

The Simla Horned Pheasant.

Descr.—Male, head black, the crest tipped with red; nape, back, and sides of neck, dark-red; back and upper parts dark brown, minutely barred irregularly with black, each feather with a round white spot on a deep black ground; shoulder of wing dark red; quills blackish, with brown mottlings and bars, and some dusky olive spots on some of the wing-coverts; tertiaries mottled like the back, and with the scapulars, having a large white spot; upper tail-coverts lengthened, the lateral feathers with a large fulvous tip edged dull black, and white spotted; tail black, unspotted towards the tip, but barred with whity brown for the greater part of its length; beneath, the throat and neck below the wattle are vivid scarlet, passing into flame colour and yellow on the lower part of the neck, these feathers being of a hard, firm, and somewhat horny texture; the breast and lower parts black, dashed with dull red, and each feather with a round white spot; the thigh-coverts mottled black and brown, paler and yellowish near the joint.

Bill blackish; irides hazel brown; naked orbits bright red, two fleshy horns pale blue; the gular wattle purple in the middle, spotted and edged with pale blue, and fleshy on the sides; legs and feet fleshy. Length 27 to 29 inches; extent 37; wing 11¼; tail 10½ to 11; tarsus 3; weight 4½ lbs.

The female has the head and all the upper parts mottled with dark and light brown and blackish, with small pointed streaks of pale yellow; quills and tail dark brown, minutely mottled and barred; the lower parts light ashy brown, very minutely powdered with blackish, and marked with irregular spots of white, very strongly so on the breast, less so on the abdomen, and becoming more ashy. The horns and fleshy wattles also are absent. Length about 24 inches; extent 32; wing 10; tail 9; legs and feet greyish ashy.

The young male is at first colored like the female; in the second year the head and neck become red, and the white spots appear; and in the third year, he gets the full plumage. In Hardwicke's Illustrations there is the figure of a young male in the second year called *Phas. melanocephalus*, female; and in Gould's Century,

pl. 64 what is there called the young male appears rather to be a cock bird in winter plumage, with the wattles not developed, and the horns shrivelled up; for Mountaineer tells us that 'the flap of skin and the horns are either cast or shrink up every year in moulting, and do not attain any size again till the ensuing spring.' In this figure, too, the red tip of the crest is very apparent, whilst in the figure of the so called adult male it is totally absent.

This very handsome Horned-pheasant is found from the Western borders of Nepal to the extreme North-West Himalayas. It is stated not to be a very common bird about Simla and Mussooree, but more abundant near Almora. "Its usual haunts" says Mountaineer, "are high up, not far from the snows, in dense and gloomy forests, either alone, or in small scattered parties. In winter they descend the hills, and then their favorite haunts are in the thickest parts of the forests of Oak, Chesnut, and Morenda Pine, where the box-tree is abundant, and where under the forest trees a luxuriant growth of 'Ringall' or the hill Bamboo forms an underwood in some places almost impenetrable. They keep in companies of from two or three to ten or a dozen or more, not in compact flocks, but scattered widely over a considerable space of forest, so that many at times get quite separated, and are found alone." If undisturbed, however, they generally remain pretty close together, and appear to return year after year to the same spot, even though the ground be covered with snow, for they find their living then on the trees. If driven away from the forest by an unusually severe storm, or any other cause, they may be found at this season in small clumps of wood, wooded ravines, patches of low brushwood, &c.

"At this season, except its note of alarm, when disturbed, the Jewar is altogether mute, and is never heard of its own accord to utter a note or call of any kind; unlike the rest of our Pheasants, all of which occasionally crow or call at all seasons. When alarmed it utters a succession of wailing cries, not unlike those of a young lamb or kid, like the syllable "*waa, waa, waa,*" each syllable uttered slowly and distinctly at first, and more rapidly as the bird is hard pressed or about to take wing. Where not

repeatedly disturbed, it is not particularly shy, and seldom takes alarm till a person is in its immediate vicinity, when it creeps slowly through the underwood, or flies up into a tree; in the former case continuing its call till again stationary, and in the latter, till it has concealed itself in the branches. If several are together, all begin to call at once, and run off in different directions, some mounting into the trees, others running along the ground. When first put up, they often alight in one of the nearest trees, but if again flushed, the second flight is generally to some distance, and almost always down hill. Their flight is rapid, the whir peculiar, and even when the bird is not seen, may be distinguished by the sound from that of any other. Where their haunts are often visited either by the sportsmen or the villagers, they are more wary, and if such visits are of regular occurrence and continued for any length of time, they become so in a very high degree—so much so, that it is impossible to conceive a forest bird more shy or cunning. They then as soon as aware of the presence of any one in the forest, after calling once or twice, or without doing so at all, fly up into the trees, which near their haunts are almost all evergreens of the densest foliage, and conceal themselves so artfully in the tangled leaves and branches that unless one has been seen to fly into a particular tree, and it has been well marked down, it is almost impossible to find them.

"In spring, as the snow begins to melt on the higher parts of the hill, they leave entirely their winter resorts, and gradually separate, and spread themselvs through the more remote and distant woods up to the region of birch and white rhododendron, and almost to the extreme limits of forest. Early in April, they begin to pair, and the males are then more generally met with than at any other period; they seem to wander about a great deal, are almost always found alone, and often call at intervals all day long. When thus calling, the bird is generally perched on the thick branch of a tree, or the trunk of one which has fallen to the ground, or on a large stone. The call is similar to the one they utter when disturbed, but is much louder, and only one single note at a time, a loud energetic "*waa*," not unlike the bleating of a lost goat, and can be heard for upwards of a mile. It is uttered at

various intervals, sometimes every five or ten minutes for hours together, and sometimes not more than two or three times during the day, and most probably to invite the females to the spot. When the business of incubation is over, each brood with the parent birds keep collected together about one spot, and descend towards their winter resorts as the season advances; but the forests are so densely crowded with long weeds and grass, they are seldom seen till about November, when it has partially decayed, and admits of a view through the wood.

"It feeds chiefly on the leaves of trees and shrubs; of the former the box and oak are the principal ones, of the latter, *ringall* and a shrub something like privet. It also eats roots, flowers, grubs, and insects, acorns and seeds, and berries of various kinds, but in a small proportion compared with leaves. In confinement it will eat almost any kind of grain. Though the most solitary of our Pheasants, and in its native forests perhaps the shyest, it is the most easily reconciled to confinement; even when caught old they soon lose their timidity, eating readily out of the hand, and little difficulty is experienced in rearing them.

The Jewar roosts in trees, and in winter, perhaps for warmth, seems to prefer the low evergreens with closely interwoven leaves and branches to the latter and larger which overshadow them."

Other species of *Ceriornis* are *C. Temminchii*, Gray, from China, figured Hardwicke's Ill. Ind. Zool.; and *C. Caboti*, Gould, also from some part of China, figured by Gould, Birds of Asia, pt. X, pl., 1.

Near these Pheasants I would place that somewhat anomalous form, the Blood-pheasant, founded on a single known species. It has more the habit, perhaps, of a Jungle-fowl than of a Pheasant, but from its geographical relations with the Pheasants, only being found at high elevations on the Himalayas, I prefer considering it a peculiar form of Hill-pheasant, and it certainly has some affinities for the Pucras-pheasants. From its small size and numerous spurs, it may be considered as holding the same relationship to the Pheasants, as *Polypectron* does to Pea-fowl, or as Spur-fowl do to Jungle-fowl. It may be considered a sort of

link between the Pheasants and Partridges, but I cannot agree with Gray in placing it among the Partridges.

Gen. ITHAGINIS, Wagler.

Char.—Bill short, stout; tail rather short, of fourteen feathers; tarsus of the male with several spurs; feathers of the neck somewhat elongated; head sub-crested. Of rather small size.

The pale grass-green color of the lower plumage of this remarkable bird, and the blood red stains are quite unique.

807. Ithaginis cruentus, HARDWICKE.

Phasianus, apud HARDWICKE, Lin. Trans. XIII. 237—BLYTH, Cat. 1455—P. Gardneri, Hardwicke (the female)—GOULD, Birds of Asia, pt. III, pl. 3—*Soomong-pho*, Lepch. *Semo*, Bhot.

THE GREEN BLOOD-PHEASANT.

Descr.—Male, with the forehead, lores, and cheeks, black; crown of the head buff; crest dull grey, with a streak of buff down the centre of each feather; back of the neck and upper surface generally dark grey, with a narrow stripe of buffy white bounded on either side with a stripe of black, down the centre of each feather, the stripes becoming larger and more conspicuous as they proceed backwards, and with a tinge of green on those occupying the lower part of the back and the centre of the greater wing-coverts; tail grey, fading into greyish white at the tip, the shafts white, and the basal three-fourths of the feathers broadly margined with blood red; beneath, the throat is blood red; the ear-coverts black, striated with buffy white, the lower part of the throat brownish black, with a stripe of greenish buff down each feather; sides of the neck buff; breast, sides of the abdomen, and flanks very pale green, with light shafts, and the feathers of the breast with a blotch of deep blood-red near the centre of either margin, giving the part the appearance of being stained with blood; middle of the abdomen, thighs and vent, dark brownish grey, striped with greenish white bounded by black; under tail-coverts deep blood-red, with a narrow line of pale yellow ending in a spatulate form at the tip, down the centre of each feather.

Bill brownish black at the tip, red at the base; orbits bright red; irides brown; legs and feet coral red. Length 16 to 17 inches; wing $8\frac{1}{2}$; tail $6\frac{1}{2}$; tarsus $2\frac{3}{4}$, with three, four or five short spurs.

The female has the forehead, cheeks and chin, bright rusty yellow; the upper parts ferruginous brown, mottled very finely with blackish; the first primaries plain dark brown; the others and the tail dark brown, freckled like the back; lower parts somewhat brighter ferruginous brown than above; the under tail-coverts and vent mottled with brown.

This beautiful bird has only hitherto been found in the South-east Himalayas, in Nepal and Sikim, and apparently not common in the former country. It appears more abundant in Sikim, in the interior, for it is not found in British Sikim, and probably extends into the Bootan Himalayas. The following remarks are by Dr. Hooker, who had the opportunity of observing it in Sikim.

"This, the boldest of the Alpine birds of its kind, frequents the mountain ranges of Eastern Nepal and Sikim, at an elevation varying from 10,000 to 14,000 feet, and is very abundant in many of the valleys among the forests of Pine, (*Abies Webbiana*) and Juniper. It seldom or ever crows, but emits a weak cackling noise. When put up, it takes a very short flight and then runs to shelter. During winter it appears to burrow under or in holes amongst the snow, for I have snared it in January in regions thickly covered with snow at an altitude of 12,000 feet. I have seen the young in May. The principal food of the bird consisting of the tops of the Pine and Juniper in spring, and the berries of the latter in autumn and winter, its flesh has always a very strong flavour, and is moreover uncommonly tough; it was, however, the only bird I obtained at those great elevations in tolerable abundance for food, and that not very frequently. The Bhotcas say that it acquires an additional spur every year; certain it is that they are more numerous than in any other bird, and that they are not alike on both legs. I could not discover the cause of this difference, neither could I learn if they were produced at different times. I believe that five on one leg, and four on the other, is the greatest number I have observed."

Near the Horned-pheasants and perhaps linking them to the true Pheasants, I would place the Pucras or Koklas Pheasants, and Bonaparte includes them both in his section *Satyreæ* of his *Lophophorinæ*.

Gen. PUCRASIA, Gray.

Syn. *Eulophus*, Lesson—*Lophotetrax*, Cabanis.

Char.—Bill short; head adorned with a double crest, a sincipital tuft on each side, and a central drooping crest; tarsi with a moderately large spur; toes and claws lengthened and slender; tail moderately lengthened, graduated, of sixteen feathers. Plumage throughout somewhat lanceolate and cock-like.

This form may be said to be a sort of link between the Horned-pheasants and the true Pheasants. It has the crest of *Phasianus*, the hackled plumage of the Jungle-fowl, and in some points appears related to the last genus *Ithaginis*. The best known species has been described under *Tragopan* by Temminck; and one writer states his belief that it leads the way from Pheasants to the *Lophophori*. It is confined to the Himalayas and adjacent highlands. Gould in his Birds of Asia describes and figures three species.

808. Pucrasia macrolopha, LESSON.

Satyra, apud LESSON—BLYTH, Cat. 1472—GOULD, Cent. Him. Birds, pl. 69,70—GOULD, Birds of Asia, pt. VI. pl. 4—P. nipalensis, GOULD, *l. c.* pl. 6 ?—HARDWICKE Ill. Ind. Zool. pl. 40—P. pucrasia, VIGORS—Tragopan Duvaucelii, TEMMINCK—*Plas*—*Pukras*—*Koklas* or *Kokla*, in various hill dialects.

THE PUKRAS PHEASANT.

Descr.—Male, with the head glossy dark green, the crown being ashy brown; medial crest, with the upper feathers, ashy brown; the lateral feathers dark green fully 4 inches; on each side of the neck a large white oblong spot; body above light ashy, each feather with a long pointed streak of black, and the wing-coverts with some blackish blotches; upper tail-coverts long, light ashy; tail brownish chesnut, black at the tip, and faintly edged with whitish; beneath, the breast and middle of the belly rich deep chesnut, ashy on the flanks; vent chesnut, the feathers white tipt.

Bill black; irides dark brown; legs and feet ashy. Length 24 inches; extent 30; wing 10; tail 12; tarsus 2½.

The female has the upper plumage pale yellow-brown, variously variegated and banded with dark brown, chesnut, and pale yellowish; chin and throat yellowish-white; lower plumage yellow-chesnut, with dark brown markings, paler down the middle of the abdomen, and darker on the flanks.

Length 20 inches; extent 28.

This very handsome Pheasant has only been found in the N. W. Himalayas, from the west of Nepal to beyond Simla. It does not occur in Sikim, nor in Eastern Nepal. Gould has figured another supposed new species as *P. nipalensis*, stating that it is smaller and more beautifully colored, the mantle, sides of the neck, and feathers of the flank being conspicuously striated with black, chesnut and grey, whilst the same parts are sombre in the other species. The figures of the two resemble each other so very closely that I cannot help doubting their being really distinct. It would appear that *nipalensis* extends into the Bootan Himalayas, but it has certainly not hitherto been sent from the intervening Sikim hills.

For an account of the habits of the Pukras, I again quote from Mountaineer.

"This is another forest Pheasant common to the whole of the wooded regions, from an elevation of about 4,000 feet, to nearly the extreme limits of forest, but is most abundant in the lower and intermediate ranges. In the lower regions its favorite haunts are in wooded ravines, but it is found on nearly all hill sides which are covered with trees or bushes, from the summit of the ridges to about half way down. Further, in the interior, it is found scattered in all parts, from near the foot of the hills, to the top or as far as the forest reaches, seeming most partial to the deep sloping forest composed of Oak, Chesnut, and Morenda Pine, with Box, Yew, and other trees intermingled, and a thick underwood of Ringall.

"The Cocklass is of a rather retired and solitary disposition. It is generally found singly or in pairs; and except the brood of young birds which keep pretty well collected till near the end of winter, they seldom congregate much together. Where numerous,

several are often put up at no great distance from each other, as if they were members of one lot; but when more thinly scattered, it is seldom more than two old birds are found together; and at whatever season, when one is found, its mate may almost to a certainty be found somewhere near. This would lead one to imagine that many pairs do not separate after the business of incubation is over, but keep paired for several successive years. In forests where there is little grass or underwood, they get up as soon as aware of the approach of any one near, or run quickly along the ground to some distance; but where there is much cover, they lie very close, and will not get up till forced by dogs or beaters. When put up by dogs, they often fly up into a tree close by, which they rarely do when flushed by beaters or the sportsman himself, then flying a long way and generally alighting on the ground. Their flight is rapid in the extreme, and after a few whirs, they sometimes shoot down like lightning. They sometimes utter a few low chuckles before getting up, and rise sometimes with a low screeching chatter and sometimes silently. The males often crow at daybreak, and occasionally at all hours. In the remote forest of the interior, on the report of a gun, all which are within half a mile or so, will often crow after each report. They also often crow after a clap of thunder or any loud and sudden noise; this peculiarity seems to be confined to those in dark shady woods in the interior, as I never noticed it on the lower hills.

"The Cocklass feeds principally on leaves and buds; it also eats roots, grubs, acorns, seeds and berries, and moss and flowers. It will not readily eat grain; and is more difficult to rear in confinement than the Jewar or Moonall. It roosts in trees generally, but at times on low bushes or on the ground. The female lays seven eggs nearly resembling those of the Moonall in colour; they are hatched about the middle or end of May. She makes her nest under the shelter of an overhanging tuft of grass, or in a corner at the foot of a tree, and sometimes in the hollow of a decayed trunk."

PUCRASIA CASTANEA, Gould, figured Birds of Asia, pt. VI., pl. 5, from the highlands adjoining the N. W. termination of the

Himalayas, may perhaps occur within our limits in Cashmere, and the Punjab Himalayas, but has not, that I am aware of, been actually recorded from any spot in our province.

The true Pheasants follow the Pukras group very closely.

Gen. PHASIANUS, Linnæus (as restricted.)

Char.—Tail elongated, cuneate, of eighteen feathers; cheeks naked, red; tarsi spurred in the males.

The true long-tailed Pheasants are found over all Central Asia, one species only occurring as far south as the Himalayan mountains, and none found in Burmah, nor in Malayana.

The type of the genus is the well known *Phasianus colchicus*, L., an inhabitant of Western Asia, now naturalized throughout great part of Europe.

The only Indian species differs somewhat in type of coloration from the more typical members, and has been separated as *Catreus* by Cabanis, but I shall not adopt the division.

809. **Phasianus Wallichii**, HARDWICKE.

Lophophorus, apud HARDWICKE—BLYTH, Cat. 1473—GOULD, Cent. H. Birds, pl. 68—P. Stacei, VIGORS—*Chir*, *Cheor*, *Banchil*, and *Herril*, in various parts of the Himalayas—*Kahir* in Nepal.

THE CHEER PHEASANT.

Descr.—Male, head dark ashy, crested, with a few long hair-like feathers; neck light ashy, gradually becoming slightly barred with dusky black; shoulders and wing-coverts yellowish ash, with curving bars of black; and, in some birds, small shining golden spots are mingled with the black curves on the shoulder; primaries dusky, partially barred with pale yellow; back and rump light reddish chesnut, barred with bluish-black; tail much graduated, the two long middle tail-feathers broadly barred with pale speckled yellow and brownish olive, blotched and speckled with black; the others barred with pale yellow black and dark chesnut; the throat and breast yellowish-ashy, with a few curving bars of black; belly dusky; thigh-coverts and vent yellowish chesnut, marked with dusky.

Bill pale horny; nude orbits bright red; irides yellowish hazel; legs and feet brown. Length up to 46 inches, of which the tail is 28, but rarely so long; wing 10; extent 32. Weight 3¼ lbs.

The female has the head, neck, and throat with large dusky oval spots; the back is more minutely mottled, and the barring on the wings more prominent; the tail, which is much shorter, has the brown mottlings bolder and more distinct; the chin is plain; and the belly and vent are plain yellowish ashy. Length 32 inches; tail 16.

Young males are said to assume their own plumage at once.

This fine, though plain colored Pheasant is only found in the N. W. Himalayas, extending into Nepal, where however not so common as further West. "It is," says Mountaineer, "an inhabitant of the lower and intermediate ranges, seldom found at very high elevations, and never approaching the limits of forest. Though far from being rare, fewer perhaps are met with than of any other kind, unless it is particularly sought for, always excepting the Jewar. The reason of this may be that the general character of the ground where they resort is not so inviting in appearance to the sportsman as other places; besides, they are everywhere confined to particular localities, and are not like the rest scattered indiscriminately over almost every part of the regions they inhabit. Their haunts are on grassy hills, with a scattered forest of oak and small patches of underwood, hills covered with the common pine, near the sites of deserted villages, old Cow sheds, and the long grass amongst precipices, and broken ground. They are seldom found on hills entirely destitute of trees or jungle, or in the opposite extreme of deep shady forest; in the lower ranges they keep near the tops of the hills or about the middle, and are seldom found in the vallies or deep ravines. Further in the interior, they are generally low down, often in the immediate vicinity of the villages; except in the breeding season, when each pair seek a spot to perform the business of incubation, they congregate in flocks of from five or six to ten or fifteen, and seldom more than two or three lots inhabit the same hill. They wander about a good deal on the particular hill they are located, but not beyond certain boundaries, remaining about one spot for several days or weeks, and then shifting to

another, but never entirely abandon the place, and year after year may to a certainty be found in some quarter of it. During the day, unless dark and cloudy, they keep concealed in the grass and bushes, coming out morning and evening to feed; when come upon suddenly while out, they run off quickly in different directions, and conceal themselves in the nearest cover, and seldom more than one or two get on the wing. They run very fast, and if the ground is open and no cover near, many will run two or three hundred yards in preference to getting up. After concealing themselves, they lie very close and are flushed within a few yards. There is perhaps no bird of its size which is so difficult to find, after the flock have been disturbed, and they have concealed themselves; when the grass is very long, even if marked down, without a good dog it is often impossible, and with the assistance of the best dogs not one-half will be found a second time. A person may walk within a yard of one and it will not move. I have knocked them over with a stick, and even taken them with the hand. In autumn the long rank grass so prevalent about many of the places they resort to, enables them to hide almost anywhere; but this is burnt by the villagers at the end of winter, and they then seek refuge in low jungle and brushwood, and with a dog are not so difficult to find.

"Both males and females often crow at daybreak and dusk, and in cloudy weather sometimes during the day. The crow is loud and singular, and when there is nothing to interrupt the sound, may be heard for at least a mile. It is something like the words, *chir a pir*, *chir a pir*, *chir chir*, *chirwa*, *chirwa*, but a good deal varied; it is often begun before complete daylight, and in spring when the birds are numerous, it invariably ushers in the day. In this respect it may rival the domestic Cock. When pairing and scattered about, the crow is often kept up for near half an hour, first from one quarter, then another, and now and then all seem to join in as a chorus. At other times it seldom lasts more than five or ten minutes.

"The Cheer-pheasant feeds chiefly on roots, for which it digs holes in the ground; grubs, insects, seeds and berries, and, if near cultivated fields, several kinds of grain form a portion; it does

not eat grass or leaves like all the rest of our Pheasants. It is easy to rear in confinement, and might, without difficulty, be naturalized in England, if it would stand the long frosts and snows of severe winters, which I imagine is rather doubtful. The female makes her nest in the grass or amongst low bushes, and lays from nine to fourteen eggs, of a dull white, and rather small for so large a bird. They are hatched about the end of May or beginning of June. Both male and female keep with the young brood, and seem very solicitous for their safety.

"This bird flies rather heavily and seldom very far. Like most others, it generally utters a few loud screeches on getting up, and spreads out the beautifully barred feathers of its long tail, both when flying and running. It does not perch much on trees, but will occasionally fly up into one close by, when put up by dogs. It roosts on the ground generally, and when congregated together, the whole flock huddle up in one spot. They will however at times roost in trees or bushes."

Other true Pheasants besides *P. colchicus* are *P. torquatus*, or the ring-necked Pheasant of China, which differs from the common one by having a white ring round the neck, and the back being green. It is figured by Gould, Birds of Asia, pt. VIII. pl. 1; and another species, *P. mongolicus*, has been lately described by Gould. *P. versicolor*, Vieillot, (*Diardi*, Temm.) figured by Gould, Birds of Asia, pt. IX. pl. 1, from Japan, has frequently interbred with the common and ringed Pheasants in England. The gorgeous *P. Reevesii*, Gray (*veneratus*, Temm.) from China, and badly figured in Hard-wicke's Ill. Ind. Zool., is placed under *Syrmaticus*, of Wagler. *P. Soemmeringii*, Temm., from Japan, a fine species with coppery red plumage, is placed by Reichenbach as *Graphophasianus*.

The Golden Pheasants form a pretty distinct group, *Thaumalea*, Wagler, (*Chrysolophus*, Gray). They have the head crested, and a sort of ruff or tippet round the back of the neck, and a very long tail. There are two species, one the well-known Golden Pheasant, *Thaumalea picta*, from China, said to extend west in Central Asia, as far as Orenbourg; and deemed by Cuvier to be

the type of the *Phœnix* of the ancients. The other species is a most lovely bird, *Thaumalea Amherstiæ*, Leadbeater, probably an inhabitant of the northern provinces of China, or Mantchouria. It is beautifully figured in Gray's Genera of Birds.

The Silver Pheasant, *Gennæus nycthemerus*, figured by Gould, Birds of Asia, pt. XI., pl. 1, is the type of another form; and this is intimately connected with a group which leads from the Pheasants to the Firebacks and Jungle-fowl, and may be placed with either. It is that of the Kalij Pheasants of the Himalayas, and, as it partakes both of the character of the Pheasants and Jungle-fowl, so, in its geographical distribution, it ranges from the head quarters of the Pheasants to the Burmese province, where Jungle-fowl take the place of the true Pheasants.

The Silver Pheasant of Burmah, *Phasianus lineatus*, Latham, figured in Belanger's Voyage, Birds, pl. 8, might be classed either with the true Silver Pheasant, or the Kalij group, but from geographic reasons I prefer placing it with the latter. It has been separated as *Grammatoptilus*, Reichenbach. It occurs throughout the hilly regions of Burmah.

Gen. GALLOPHASIS, Hodgson.

Syn. *Euplocomus*, Temminck (in part).

Char.—Head more or less crested; orbits naked, red; plumage glossy black and white; the feathers of the neck and breast hackled; tail moderately long, of sixteen feathers, divaricated, raised in the centre, as in Jungle-fowl, and held demi-erect, the feathers drooping and curving outwards.

This group is composed of at least three species, two being found in the Himalayas, and one in Assam, Chittagong and Arrakan. They are birds about the size of a small fowl, and live at various elevations, from 3,000 feet to 7,000 feet and upwards. Gray places them among the Jungle-fowl, but from their Himalayan distribution, and their not extending far South, I prefer placing them with the Pheasants, but leading directly to the Firebacks and Jungle-fowl.

810. Gallophasis albocristatus, Vigors.

Phasianus, apud Vigors—Gould, Cent. Him. Birds, pl. 66, 67—P. Hamiltonii, Gray—Hardwicke, Ill. Ind. Zool. 1 pl. 41—Blyth, Cat. 1470—*Kalij*—*Murgh-kalij*, and *Kukera*, H. at Simla and the N. W. Himalayas.

The White-crested Kalij-pheasant.

Descr.—Male, head, neck, wings and tail shining bluish black; a long crest of slender decomposed feathers, white; lower back and rump dull white, slightly barred with black, the feathers being black at the base, broadly tipped with white; throat and breast greyish white, the feathers lanceolate; belly and vent dark grey.

Bill dark horny; naked orbits bright red; irides brown; legs and feet dark horny. Length 26 inches; extent 32; wing 10; tail 12 to 15. Weight about 3 lbs.

The female is less than the male, of a light brown colour throughout, each feather being tipped with pale whity brown; the chin whitish; lateral tail-feathers dark. The young male is said to get his proper plumage the first year.

The white-crested Kalij is found in the North-west Himalayas, as far as Nepal, where it meets with the next species, and hybrids between the two are not uncommon; and these have caused some confusion of species, *P. leucomelanos*, of Latham being considered as one of these hybrids, and *P. hamiltonii* another.

"The well known Kalleege" says Mountaineer "is most abundant in the lower regions; it is common in the Dhoon at the foot of the hills, in all the lower vallies, and every where to an elevation of about 8,000 feet; from this it becomes more rare, though a few are found still higher. It appears to be more unsuspicious of man than the rest of our Pheasants; it comes much nearer his habitations, and from being so often found near the villages and road-sides, is considered by all as the most common, though in their respective regions the Moonall is more numerous. In the lower regions, it is found in every description of forest from the foot to the summit of the hills, but it is most partial to low coppice and jungle, and wooded ravines or hollows. In the interior it frequents

the scattered jungle at the borders of the dense forest, thickets near old deserted patches of cultivation, old cowsheds and the like, coppices near the villages and roads, and in fact forest and jungle of every kind, except the distant and remoter woods in which it is seldom found. The presence of man, or some trace that he has once been a dweller in the spot, seems as it were, necessary to its existence.

"The Kalleege is not very gregarious; three or four are often found together, and ten or dozen may sometimes be put out of one small coppice, but they seem in a great measure independent of each other, and much like our English Pheasants. When disturbed, if feeding or on the move, they generally run, and do not often get up unless surprised suddenly and closely, or forced by dogs, and lie rather close in thick cover. They are never very shy, and where not unceasingly annoyed by sportsmen or shikarees, are as tame as any sportsman could wish. In walking up a ravine or hill side, if put up by dogs, a little distance above, they will often fly into the trees close above his head, and two or three allow themselves to be quietly knocked over in succession. When flushed from any place where they have sheltered, whether on the ground or aloft, they fly off to some distant cover, and alight on the ground in preference to the trees. Their call is a loud whistling chuckle or chirrup; it may occasionally be heard from the midst of some thicket or coppice at any hour of the day, but is not of very frequent occurrence. It is generally uttered when the bird rises, and if it flies into a tree near, often continued some time. When flushed by a cat or a small animal, this chuckling is always loud and earnest.

"The Kalleege is very pugnacious, and the males have frequent battles. On one occasion I had shot a male which lay fluttering on the ground in its death struggles, when another rushed out of the jungle and attacked it with the greatest fury, though I was standing reloading the gun close by. The male often makes a singular drumming noise with its wings, not unlike the sound produced by shaking in the air a stiff piece of cloth. It is heard only in the pairing season, but whether to attract the attention of the females or in defiance of his fellows, I cannot say, as I have

never seen the bird in the act, though often led to the spot where they were by the sound.

It feeds on roots, grubs, insects, seeds, and berries, and the leaves and shoots of shrubs. It is rather difficult to rear in confinement when caught old; and the few chicks I have tried, have also soon died, though possibly from want of proper care and attention. It is singular that of the Hill-pheasants the one most common near the habitations of man, should so ill brook the loss of liberty, while the Jewar, the most retired and solitary of all, is the most easily reconciled to it. The Kalleege lays from nine to fourteen eggs, much similar in size and colour to those of the domestic hen. They are hatched about the end of May."

811. **Gallophasis melanotus,** Blyth.

Euplocomus, apud Blyth, Cat. 1469—*Karrick-pho,* Lepch.—*Kirrik,* Bhot.—*Kalij* of Europeans at Darjeeling.

The Sikim Kalij Pheasant.

Descr.—Male, the whole upper plumage, including the crest, glossy black; beneath white; the feathers of the throat and breast long and lanceolate; abdomen, vent, and under tail-coverts dull brownish black.

Bill pale horny yellow; orbitar skin fine red; irides brown; legs horny; weight about 3 lbs. Length 27 inches; wing $9\frac{3}{4}$; tail 13; tarsus 3.

The female has the plumage brown, pale and whitish about the head and throat, the feathers of the back tipped with greyish, and those of the wing-coverts and beneath, broadly edged with white, all the feathers faintly white-shafted.

The Sikim black Pheasant differs conspicuously from that of Simla by the crest being black, and in having no white on the rump. In this last point, it differs also from another species, *Gallophasis Horsfieldii.* It extends into Nepal for some distance till it meets the previous species. About Darjeeling it is the only Pheasant at all common, and is not unfrequently put up on the

road side by dogs, when it at once takes refuge in trees. It is found from 3,000 to nearly 8,000 feet; walks and runs with its tail semi-erect, and frequents both forests and bushy and grassy ground, coming to the fields and more open spaces to feed in the morning and evening. Its eggs are occasionally found by the coolies when weeding the Tea-gardens in June and July, and are usually, I am told, five to eight in number. Its call sounds something like *koorchi-koorchi*, at other times *koorook-koorook*.

Gallophasis Horsfieldii, figured by Gray in his Genera of Birds, and also by Wolf, is found in all the hilly regions of Assam, Sylhet, Tipperah, and Chittagong, where called *Muthura*. It differs from the Darjeeling Kalij by having the back and rump white, &c. I found it in the Khasia Hills, at between 3,000 and 4,000 feet of elevation. It grades into the Burmese *G. lineatus*, specimens from Arrakan, being apparently hybrids between the two species.

Sub-fam. GALLINÆ.

Head sometimes furnished with fleshy crest and wattles, or crested, or sub-crested; tail usually of fourteen feathers, compressed, and more or less divaricate, held demi-erect; the upper tail-coverts in the males are (typically) elongated and pendent.

This division comprises, according to our views, the Jungle-fowls of India and Malayana; the Fire-backs, and the black Pheasants, peculiar to the Malayan region; and a small group from India and Ceylon, the so called Spur-fowl of Indian sportsmen. Although one species extends to the lower ranges of the Himalayas, it cannot be called a Himalayan form, and thus this series of game birds differ remarkably in their geographic distributions from the last, only one form of which (and that one osculant with the present division) extends south of the Himalayan region. A very beautiful bird, *Diardigallus prelatus*, Bonaparte, from Siam, may be considered the link from the Kalij Pheasants to the Jungle-fowl, or rather to the Fire-backs. It has a peacock-like crest, a rather long glossy black tail, the upper plumage and breast silvery grey, and the rump pale golden yellow. It is figured by Gould in his birds of Asia, pt. XII., pl. 4. Next this should come the

Fire-backed Pheasants, *Macartneya*, with two species, *Phasianus ignitus*, and *P. Vieilloti;* large birds with black plumage, the back fiery red, and the middle tail feathers white. The head is slightly crested, and the orbits are blue. Next *Alectrophasis*, Gray, founded on the *Lophophorus Cuvierii* of Temminck, a very beautiful bird; and *Acomus*, founded on the *Phasianus erythropthalmos*, similar but smaller, and in which genus the female is occasionally spurred. This and the last have rufous tails. Next these the Jungle-fowl.

Gen. GALLUS, Linnæus.

Char.—Head furnished with a crest of skin; the face nude, and also a loose lappet or wattle; tarsus of the male strongly spurred; the spur long and slightly curved; tail, of fourteen feathers, compressed, divaricated, with the median feathers lengthened, curved and drooping, held semi-erect, the backs of the feathers facing each other; the upper tail-coverts lengthened and curved; feathers of the neck hackled, lanceolate.

This genus comprises the so called Jungle-fowl, the origin of all our varieties of Fowl, and its general characters are familiar to all. Several species are known occurring from India as far as Timor at all events. India possesses two, and Ceylon another species.

812. Gallus ferrugineus, GMELIN.

Tetrao, apud GMELIN—figured by LATHAM as the Hackled Partridge—BLYTH, Cat. 1462—G. bankiva, TEMMINCK (in part) —HARDWICKE Ill. J. Z. 1 pl. 43 f. 3 the hen,—JERDON, Cat. 267 —*Ban murgh*, or *Jangli-murgh*, H.—*Bankokra* of the Sontals and in Central India—*Gera gogor* of the Gonds (the male), *Kuru* (the hen)—*Natsu-pia*, Bhot.—*Pazok-tshi*, Lepch.

THE RED JUNGLE-FOWL.

Descr.—Male, colors as in the typical Barn-door fowl, *viz.*, rich golden hackles on the head, neck, throat and breast, paler on the sides of the neck and posteriorly; ear-coverts white; back purplish brown in the middle, rich orange brown on the sides; upper tail-coverts lengthened, also bright orange; wings with the lesser and greater coverts black, glossed with green; median-coverts rich

dull maronne; primaries dusky with pale edges; secondaries chesnut externally, dusky within; tertiaries glossy black; tail with the central feathers rich glossy green-black, the gloss diminishing on the lateral feathers; beneath, from the breast, unglossed black; thigh-coverts the same.

Bill slaty brown; irides orange red; face, comb, and wattles red; legs slaty black. Length about 26 inches; wing 9; tail 15; tarsus $2\frac{3}{4}$. Weight about $2\frac{1}{4}$ lbs.

The Jungle-hen has the general colour yellowish brown, minutely mottled with dark brown; and some of the feathers, especially of the upper back and wing coverts having conspicuously pale shafts; the head dusky above, passing into short hackles of dark brown, edged with bright yellow on the neck and sides of the breast; quills and tail dark brown; the central rectrices edged with mottled brown; ear-coverts yellowish; a line down the throat deep bright red-brown ending in a point below, and passing up in a line behind the ears to join a small supercilium of the same hue; breast pale rufous brown, with central pale streaks, lighter on the middle of the belly and becoming dull brown on the flanks, vent, thigh-coverts, and under tail-coverts. She wants the comb and wattles, and has only a small nude red space. Length 16 or 17 inches; tail 7.

The well known Jungle-fowl is found from the Himalayas southwards, on the west of India, as far at all events, as the range of Vindhian hills; and as I have been informed by Mr. W. Blanford since the above remarks were penned, also south of the Nerbudda on the Raj-peepla hills. Col. Sykes' variety found in the Western Ghâts with much red in its plumage must be this species, but it is to be wished he had noted the particular locality. On the east, it occurs through Central India and the Northern Circars to near the north Bank of the Godavery. I have heard of its having been killed even south of this, at Cummum, but I cannot speak positively on this head. I have not seen it myself further south than the banks of the Indrawutty, not far from its junction with the Godavery, and there both this species and the next were heard crowing a few yards from each other. I shot one bird, an undoubted hybrid between the two races.

In Central India, this Jungle-fowl is rare, especially towards the Western portion, at Jubbulpore, Saugor, Mhow, &c., but it is very abundant to the East, and particularly so in the Northern Circars. It is not uncommon, too, in the Rajmahal hills, extending to the south bank of the Ganges. Towards the North-west it occurs in the range of hills South of Cashmere, and to the West of Jummoo, but is rare there, though common in the lower ranges near Simla, and thence along the Himalayas to Assam, Sylhet, Chittagong and Burmah. Malayan specimens are decidedly darker in tint, and have the ear-coverts rufous, and perhaps may be considered to be a distinct race or species, which, in that case, would bear Temminck's name, *Bankiva*. This race appears to extend over many of the Malayan islands, as far as Timor, at all events; and Mr. Blyth drew my attention to the statement of Jungle-fowl occurring in the Bonin islands. Certain pale-colored birds from the lower Himalayan ranges were noticed in the Ann. and Mag. Nat. Hist., Vol. XX., p. 389.

The Jungle-fowl is very partial to Bamboo jungle, but is found as well in lofty forests and in dense thickets. When cultivated land is near their haunts, they may, during the harvest season and after the grain is cut, be seen morning and evening in the fields, often in straggling parties of ten to twenty. Their crow which they give utterance to morning and evening, all the year round, but especially at the pairing season, is quite like that of a Bantam cock, but shorter, and never prolonged as in our domestic cocks. The hen breeds from January to July, according to the locality, laying eight to twelve eggs, of a creamy white color, often under a bamboo clump, or in some dense thicket, occasionally scraping a few leaves or dried grass together to form a nest. Sooner or later after the breeding season is over, the neck hackles of the male sometimes fall off, and are replaced by short blackish grey feathers.

Where detached clumps of Jungle or small hills occur in a jungly district where these Fowl abound, very pretty shooting can be had by driving them by means of dogs and beaters; and in travelling through a forest country, many will always be found near the roads, to which they resort to pick up grain from the droppings

of cattle, &c.; dogs will often put them up when they at once fly on to the nearest trees. Young birds, if kept for a few days, are very excellent eating, having a considerable game flavour.

813. Gallus Sonneratii, Temminck.

Pl. Col. 232 and 233—Phas. gallus, apud Sonnerat—Phindicus, Leach—Blyth, Cat. 1464—Sykes, Cat. 148—Jerdon, Cat. 266—*Jangli murgh*, H.—*Adavi kodi*, Tel.—*Katu koli*, Tam.

The Grey Jungle-fowl.

Descr.—Whole head and neck, with the hackles, blackish grey, with yellow spots, each feather being blackish, with the shaft white and two spots, the terminal one of somewhat square form, as if a drop of yellow sealing wax; the other whitish, passing on the wing-coverts into oblong spots of glistening wood-brown; ear-coverts pale rufous; the rest of the plumage above and below, blackish grey, the feathers white shafted, and those on the flanks broadly centered and tipped with wood-brown; outermost primaries dusky, with the shaft and narrow edge pale; the others black, faintly glossed; upper tail-coverts glossy purple; the central tail feathers glossy green, the gloss diminishing on the lateral feathers; vent dirty brownish; under tail-coverts glossy black, with white shafts.

Bill yellowish horny; comb, face, and wattles red; irides orange brown; legs and feet horny yellowish. Length 24 inches and upwards in fine specimens; wing 9½ to 10; tail 15 to 16; tarsus 3¼; weight 2½ lbs.

The Hen is mottled brown above, with pale shafts on the wing-coverts; beneath blackish brown, the feathers broadly centered with pure white, passing into plain dull brown on the flanks, thigh-coverts, vent, and under tail-coverts; head and neck rufous brown, paler on the chin and throat and somewhat yellowish; primaries dark brown, the secondaries mottled brown; tail blackish brown, edged with mottled brown. Length about 17 inches.

This handsome Jungle-fowl is found in Southern India only, extending on the east coast to a little north of the Godavery, in

Central India to the Pachmarri or Mahadeo hills, north of Nagpore, and on the west coast to the Rajpeepla hills, where it meets the Red Jungle-fowl. Its occurrence on the Pachmarri hills is most probably its eastern extension from the Western Ghâts and the Rajpeepla hills, and it will probably be found all along the Sathpoora range. I do not know of its occurrence east of the Mahadeo hills, till the neighbourhood of the lower part of the Godavery is reached. It is very abundant on the Malabar Coast, especially in the more elevated districts, as in the Wynaad, and it ascends to the summit of the Neilgherries; it is also common in suitable localities on the Eastern Ghâts, and in the various isolated ranges of hills in the south of India. It is not rare in the Naggery hills near Madras, and is constantly brought for sale to the Madras market.

Like the last, it is particularly partial to bamboo jungles. Early in the morning, throughout the Malabar Coast, the Wynaad, &c., Jungle-fowl may always be found feeding on the roads, and, with dogs, you are certain of getting several shots on the road side, the birds perching at once on being put up by dogs. In some districts where they can be beaten out of the woods, and especially on the Neilgherries, very pretty shooting is to be had at this Jungle-cock, the sharply defined woods, or 'sholas' as they are called, being well adapted to being beaten for game. The Hen lays from February to May, generally having from seven to ten eggs, of a pinky cream colour, under a bamboo clump. The call of the Cock is very peculiar, being a broken and imperfect kind of crow, quite unlike that of the Red Jungle-cock, and impossible to describe. When taken from the jungles they are more wild and not so easily domesticated as the Red Jungle-fowl; but they have bred in confinement with Hens of the common breed. I have already noticed the occurrence, in a wild state, of hybrids between this and the Red Jungle-fowl.

Ceylon possesses a separate species of Jungle-fowl, *Gallus Stanleyi*, Gray, (*G. Lafayetti*, Lesson; *lineatus*, Blyth), something like *Bankiva*, but red beneath; and Java has another very distinct species, *Gallus furcatus*, Temminck. Several other races are noted, but some of them are doubtful species, *G. æneus*, Temm.,

being considered a hybrid between *furcatus* and *bankiva*. Gray has lately figured a fine Cock from Batavia, *G. Temminckii*.

Lastly we come to what may be considered a dwarfed or degraded race of Jungle-fowl, peculiar to the Continent of India and Ceylon, the so called Spur-fowl of sportsmen in the South, the double-spurred Partridge of some. These birds, which are only of the size of Partridges, have no comb nor wattles, but they have nude orbits, quite the port of Jungle-fowl, and the sexes differ nearly as much, in which point they do not agree with the Partridge group. They moreover, frequent woods and dense cover, never coming into the open.

Gen. GALLOPERDIX, Blyth.

Char.—Bill somewhat lengthened; orbits nude; tail moderately long, broad, of 14 feathers, held erect and folded as in fowls; tarsus of the male with two or more spurs; females also with one or more spurs. Of small size. Sexes differ much in colour.

Only three species are known at present.

814. Galloperdix spadiceus, GMELIN.

Tetrao, apud GMELIN—BLYTH, Cat. 1458—HARDWICKE, Ill. Ind. Zool. 1 pl. 42 f. 2—GOULD, Birds of Asia, pt. VI. pl. 3—, SYKES, Cat. 160—JERDON, Cat. 274—Polyplectron northiæ, GRAY, HARDWICKE, Ill. I. Z. I. pl. 43, f. 1 (the female)—*Chota jangli murgh*, H.—*Yerra kodi*, and *Jitta kodi*, Tel.—*Saravi koli*, Tam. *Kokatri*, Mahr.

THE RED SPUR-FOWL.

Descr.—Male, head and nape dusky olive-brown; the forehead and round the eye pale whity brown, somewhat buff in some individuals; chin, throat, and sides of neck pale brown; the rest of the body both above and below, rich brown-chesnut or bay; each feather pale edged; primaries brown; the secondaries and tertiaries more or less minutely mottled; tail with the central feathers chesnut, the others dark-brown, more or less mottled, this disappearing with age; lower abdomen, vent, and under tail-coverts, olivaceous.

Bill dusky-horny; orbits red; irides orange brown; legs and feet vermillion red. Length 14 to 14½ inches; wing 6½; tail 5; tarsus 2; weight 12 to 13 oz.

The female has the crown dusky blackish, the neck olive brown, and the rest of the upper plumage pale rufous-brown, each feather with two or three blackish bands, and minutely speckled, and the tip pale; the rump and upper tail-coverts are minutely freckled; the tail mostly blackish, with mottled rufous bars, tending to become obsolete; primaries, their coverts, and the winglet, spotless dusky brown; throat albescent; neck olive brown, the feathers becoming rufous in the centre, and tipped with black; breast and flanks bright ferruginous, with narrow black tips; belly dusky brown; under tail-coverts freckled rufous brown.

Length 13 inches; tail 4¾.

The male bird has usually two spurs on each tarsus, sometimes three on one, and occasionally two on one leg and one on another, often long and sharp. The hen bird has usually one on each leg, sometimes absent on one leg; and occasionally two on one leg and one on the other.

The Red Spur-fowl is found throughout the South and many parts of Central India, extending into the Rajmahal and Kurrukpore hill ranges south of the Ganges, but rare there. I have seen it most abundant in the Malabar jungles, from near the level of the Sea to the Neilgherries, up to nearly 7,000 feet of elevation, but more common lower down; in the Northern Circars; in the eastern parts of Central India; in the high land between Nagpore and the Nerbudda, and also in the Vindhian range. As both male and female are figured in Hardwicke's Illustrations, it may occur in some parts of the North-western Provinces, but I have not seen it recorded higher than Bundelkund. In the less wooded ranges of the Eastern Ghâts, it is rare, being there replaced by the next bird. This species is stated in some works to inhabit Madagascar as well as India, but this is exceedingly doubtful. If it really has been received as from Madagascar, I would accept Mr. Blyth's conjecture that it and *Francolinus sinensis* (also stated to have been received from

that Island) have been introduced into the Mauritius, and sent thence along with various Madagascar birds. It is more probable, however, that some other species has been mistaken for it, probably *Tetrao madagascariensis*, which, indeed, Gray places next *Galloperdix* in his genus *Plectrophorus*; but which most probably belongs to the African *Francolins* rather than to the *Gallinæ*.

The Red Spur-fowl chiefly affects forests, or dense thickets of bamboos, and is difficult to obtain without dogs, as it runs before the sportsmen or beaters; and, in driving some of the large forests for Deer, these Spur-fowl as well as Jungle-fowl and Pea-fowl often run past the concealed gunner. On the Neilgherries good shots can be had in beating the woods there, and two or three Spur-fowl generally form part of a miscellaneous bag on those hills. Dogs cause it to perch on trees at once, and it always roosts on trees at night. It feeds on various kinds of grain, and very much on insects, especially on various kind of bugs, larvæ of small blattæ, &c., it comes less to the open to feed than Jungle-fowl, and I have never flushed it in fields. It runs with its tail raised, and is always considered a sort of Jungle-fowl by the natives. The call is a sort of crowing cry which the Mahrattas have attempted to imitate in their name, and the call note of the hen is quite fowl-like. It is stated to breed in dense thickets in March and April. The flesh, though rather dry, is of high flavour, and if, as on the Neilgherries, it can be kept a few days, is really excellent.

815. **Galloperdix lunulosus**, Valenc.

Perdix, apud Valenciennes—Blyth, Cat. 1457—Francolinus nivosus, Delessert Voy. aux. Indes pl. 10—P. Hardwickii, Gray, Hardwicke, Ill. Ind. Zool., 1, pl. 52—Jerdon, Ill. Ind. Orn. pl. 42 (the female.)—*Jitta kodi*, Tel.

The Painted Spur-fowl.

Descr.—Male, head, face, and neck variegated black and white, the feathers being black with white streaks and triangular spots, the head mostly black; the upper plumage and wings rich chesnut, with white spots on the back, sides of neck, shoulders, and wing-

coverts; primaries earthy brown; tail dark sepia brown, glossed with green in old birds; beneath, the throat and neck are variegated black and white, changing on the breast to ochreous buff, with small triangular black marks, which disappear on the abdomen; the flanks, thigh-coverts, and under tail-coverts dull chesnut.

Bill blackish; orbits red; irides red brown; legs horny brown. Length 13 inches; wing 6; tail 5; tarsus 1½.

The female has the top of the head dusky, with the forehead, over the eye, and the nape tinged with chesnut; a pale ruff and moustachial line; the rest of the plumage dull olive brown, changing to ochreous-olive on the breast and abdomen.

Length 12½ inches.

The male has generally two spurs on each leg, occasionally three, and the hen bird has almost always one, frequently two. Young males have the general plumage of females, with the tertiaries and tail chesnut brown, with black bands; and young females have blackish lunulations on part of their plumage.

The Painted Spur-fowl is not found on the Malabar Coast nor on the Neilgherries, but is common in several of the isolated hill ranges of Southern India, and all along the Eastern Ghâts which are more scantily clad with forest than those on the Malabar Coast; also in rocky hills about Hyderabad in the Deccan, and thence sparingly through Central India, and the Saugor and Nerbudda territories to the Monghyr and Mirzapore hills, and perhaps still further West, the male bird being figured in Hardwicke's Illustrations as from Cawnpore. A writer in the *Bengal Sporting Review* states that he has seen them in the Cuttack jungles; but in Goomsoor, a little further south, I saw only the Red Spur-fowl. The same writer states them to be frequently seen on the hilly parts of the Grand Trunk Road. Either this or the last species is called the 'Nerbudda Chukor' in some pages of the same periodical.

This handsome Spur-fowl is especially partial to rocky jungles and tangled coverts, and is a very difficult bird to flush, taking a short and rapid flight, and diving down into some impenetrable thicket. I have often seen it running rapidly across rocks when the jungles were being beaten for large game. From the difficulty

of procuring this bird, it is not well known to sportsmen in general, even in districts where it is not rare; and its qualities for the table are inferior to those of the last species, having less flavour and being more dry. Numbers are snared in the hills not far from Madras, and they are generally procurable in the Madras market. I have kept them in confinement for long. They thrive pretty well, but the males are very pugnacious. The males have a fine cackling sort of call, very fowl-like. This Spur-fowl has been introduced into the Zoological Gardens of London, and appears to be thriving well. A figure of it appeared in Wolf's Zoological sketches of Animals and Birds living in those gardens.

The only other known species of Spur-fowl, *Galloperdix zeylonensis*, is somewhat allied to the last species, but differs conspicuously by the lower parts being mottled black and white, somewhat as in the Painted Partridge. It is figured by Gould in Birds of Asia, pt. VI. pl. 2.

Blyth considers *Ptilopachus*, an African genus, to approximate *Galloperdix*, but on geographic considerations I prefer keeping it among the Francolins and Partridges as Gray has done. The Turkeys are sometimes placed as a division of the *Phasianidæ*, but I think on grounds both of structure, habit, and geographic distribution, that they ought to be kept distinct. Bonaparte, indeed, places them, and the somewhat less isolated Guinea fowls of Africa, as families in one Cohort, *Craces*, with the *Cracidæ*; and Gray places both Turkeys and Guinea-fowl in his sub-fam. *Meleagrinæ* of the *Phasianidæ*. Though I can hardly agree with Bonaparte in associating them with the Curassows from which they differ in so many structural details, yet I agree with him that geographic distribution must be considered in allotting a place in the natural system to any group.

The *Meleagridæ* or Turkeys, are birds of large size, with the head and neck naked; a fleshy caruncle hangs from the cere, partially erectile, and the throat is furnished with a pendulous carunculated wattle capable of expansion and turgescence, when the bird is excited either by anger or desire; the tail has eighteen broad feathers, which the male raises erect and spreads, puffing out

his plumage and gobbling. The tarsus is armed with a blunt spur, and the bill is rather short and stout. Three species are now known, *Meleagris sylvestris*, of N. America; *M. ocellata*, of Honduras; and *M. mexicana*, Gould, undoubtedly the origin of the domestic Turkey. They frequent woods, associating in large flocks.

Fam. TETRAONIDÆ—Grouse and Partridges.

Syn. Cohort *Perdices*, Bonap.

Bill generally short, stout, and thick; nostrils, in many, plumed at the base; wings rounded in most, pointed in a few, longer than in the *Phasianidæ*; tail short or moderate, even or very slightly rounded, forked and lengthened in a few; tarsus rather short and stout; face feathered entirely, or with a small patch of nude skin over or round the eye. Plumage of the sexes in general differing but very slightly, sometimes not at all.

The Grouse, Partridges, and Quails, which compose this family, differ markedly in several points from the Pheasants and Jungle-fowls, albeit some of them have more or less resemblance to the birds of that group. The Black-cock with his forked tail and black plumage recalls the coloring of *Gallophasis* and *Acomus*; and the Capercailzie has the perching habits of the Pheasants. But there is something in the physiognomy of most of this family which points them out, even to the common observer, as a distinct group. Their form is heavy, stout, and massive; the neck shorter; the bill stout and short; the tail is shorter, and seldom raised; there is very slight, often no difference between the sexes; and the plumage of most has that peculiar character distinguished as game plumage, rather a vague term certainly, and more evident to the eye than describable in words.

They have, moreover, a totally different geographical distribution, being found over all the world, whilst the *Phasianidæ* are confined nearly to the South-east of Asia. Bonaparte places them as his Cohort *Perdices;* but in relation with the *Pteroclidæ* and *Tinamidæ*, to neither of which they are very closely affined. They, as a general rule, affect open grass lands, moors, fields, and low scattered jungle, in contradistinction to the Pheasant tribe which almost always prefer forests or thick coverts; and

several associate in parties called *coveys*, or *bevies*, and in still larger bodies or flocks in winter. The flesh of all is good and high flavored, more so perhaps than that of the Pheasants, but varying of course according to the group, or even the species.

The *Tetraonidæ* may be divided into Grouse, Partridges, American Partridges, Quails and Guinea-fowl, and, as in the last family, I shall consider these as sub-families. Of these, the Grouse are peculiar to the Northern portions of both Continents. Partridges are found in Europe, Asia and Africa, disappearing in the Malayan Archipelago, except to its extreme west; the American Partridges are confined to the New World; and Quails have the same distribution as the true Partridges, but, conversely to that group, have a tendency to accumulate in the South-eastern portion of the Malayan Archipelago and Australia, where, with *Turnix* of the *Tinamidæ*, they are the only typical Gallinaceous birds. The Guinea-fowl of course are confined to Africa.

The sub-fam. TETRAONINÆ, or true Grouse, are not represented in India, being peculiar to the Northern portion of both Continents. They are mostly birds of large or moderate size, and of strong flight, with the tarsus and toes more or less feathered; they frequent heathery moors, or upland and hilly pastures. Some, the Grouse, are polygamous; others, as the Ptarmigan, so similar otherwise to Grouse, are monogamous. The plumage is in general dark, and of very game character, and the flesh is the most highly flavoured of any of the *Gallinaceæ*. The best known are the Scottish Grouse, *Tetrao scoticus;* the Black-cock, *Lyrurus tetrix;* the noble Capercailzie, *Urogullus vulgaris;* and the mountain-loving Ptarmigan, *Lagopus mutus*. Several other species of Grouse occur on the Continent of Europe and Northern Asia, and one species of Ptarmigan occurs in the Caucasus, but as yet no species of Grouse or Ptarmigan has been observed on the Himalayas or adjacent territories. The Ruffed Grouse of Europe, *Bonasa betulina*, Scopoli, descends to a lower latitude than any of the true Grouse; and Mr. Blyth states that he has recognised a new species of this group among some Chinese drawings. Many Grouse are found in North America, one group, the *Centrocercus*

or Pin-tailed Pheasants, as they are there called, being peculiar to that region.

Sub-fam. PERDICINÆ.

Tarsus not feathered; orbits generally plumed, or wanting the nude eyebrow of the Grouse; tarsus often spurred.

This sub-family comprises an extensive group of birds of moderate or small size, found over the greater part of the Old Continent, frequenting fields, pastures, reeds, moors, and rocky hill sides, very rarely preferring forests or jungles. They are distinguished from Grouse by having the tarsus nude and generally scutate. The beak is generally short and tolerably compressed, the margin entire, and the nostrils protected by a hard scale. They lay numerous eggs, and feed on grain, berries, insects, and small molluscs.

There are several distinct types of form among them, differing in the spurring of the tarsus, longer or shorter bill, coloration, and habits; and they are found throughout the Old World, not extending to the eastern portion of Malayana, nor to Australia.

The Partridges occurring in India may be divided into Snow-cocks and Snow-partridges, peculiar to the highlands of Central Asia and the Himalayas; Partridges, (in ordinary parlance) comprising the Francolins, Chukors, Grey-partridges, Wood-partridges and Bush-quails. Besides, there are the true Partridges, represented by the common Grey-partridge of Europe, with one species from Thibet; and the great group of African Partridges.

1*st*.—SNOW-COCKS AND SNOW-PARTRIDGES.

These comprise two genera of mountain Partridges peculiar to the higher regions of Central Asia, which combine the naked tarsi of Partridges with the habits and aspect of Grouse and Ptarmigan, and may thus be said to form a link, both structurally and geographically between the two groups. Both occur within our limits. Bonaparte places them in his section *Tetrao-galleæ* of his *Perdicinæ*, but badly associates with them *Galloperdix*, *Francolinus*, and the Grey-partridges of India, and also most of the African Partridges, some of which, from their size, may perhaps enter this group. Gray associates them with the Rock and Sand-partridges (*Chukors*) to form his sub-fam. *Caccabinæ*.

Gen. TETRAOGALLUS, Gray.

Syn. *Megaloperdix*, Brandt.—*Chourtka*, Motsch.—*Oreotetrax*, Cabanis.

Char.—Bill longish, stout, broad; a small naked patch behind the eye; wings moderate and somewhat pointed, having the 2nd and 3rd quills the longest; tail ample, moderate, of eighteen feathers; tarsi short, stout, with a short blunt spur. Of large size—Sexes alike.

Until recently but one species was recognised in this fine group, but now four very distinct species have been discriminated, and a fifth indicated. They are birds of large size, as large as a Black-cock, of a light mottled grey colour; and they frequent the highest spots close to the snows; from their large size they are often popularly called Snow-pheasants; but, from their association with the birds of this group, perhaps had better be called Snow-cocks.

816. Tetraogallus Himalayensis, GRAY.

BLYTH, Cat. 1487—GOULD, Birds of Asia, pt. V. pl. 2—T. nigelli, apud GRAY, HARDWICKE, Ill. Ind. Zool. vol., 2 pl. 46—Lophophorus nigelli, JARD. and SELBY, Ill. Orn. 3 pl. 141—*Jer-monal* in the N. W. Himalayas—*Kabak*, and *Gourkagu* in some parts—*Huin-wal*, in Kumaon—Snow-pheasant, Snow Chukor, and Strath Chukor of sportsmen.

THE HIMALAYAN SNOW-COCK.

Descr.—Crown of head, cheeks, and back of neck grey, the rest of the upper parts light ashy-grey, minutely freckled with black, purer ashy on the wings, and tinged with brownish rufous on the back; each feather of the back, rump, and wing-coverts, striped with dull buff, more rufous, and inclining to chesnut brown on those of the wings; primaries white, broadly tipped with dusky freckled grey; tail reddish on the outer web, minutely freckled with black; freckled grey on the inner webs; beneath, the chin and throat are whitish; a band of chesnut passes from above the eye down the sides of the nape, and another from the angle of the mouth passes down the sides of the neck and meets the first, when

it forms a collar round the lower part of the throat; beneath this the breast plumes are somewhat scale-like, the upper ones greyish with a black lunule, the lower ones whitish; the rest of the lower surface is grey, minutely freckled with brown, pale on the flanks, and with a double broad dash of chesnut on each feather; vent and under tail-coverts white; thigh-coverts dark grey.

Bill pale horny; naked patch behind the eye yellow; irides dark brown; legs yellowish red. 'Length 29 inches; extent 40; wing 13; tail 8; tarsus 3. Weight 6½ lbs.

The females are somewhat smaller, 24 inches long; wing 12; tail 7.

This fine bird is found throughout all the Western portion, at all events, of the Himalayan range, as far as Nepal, but it is not certain if it extends eastwards into Sikim and Bootan. It is also found across the higher ranges in Chinese Tartary and Thibet. It is probably the species observed in Cashmere by Vigne, who states that it inhabits the Snowy Punjab on both sides of the valley, but more common on the Thibet side. 'These fine birds,' says Hutton, 'are common in the Hazara mountains, and are called *Kauk-i-durra* or the 'Partridge of the Ghâts' by the Affghans, and they are sometimes sold in the markets of Cabool and Candahar. They rise in coveys of from ten to twenty, and usually have a sentry perched on some neighbouring rock, to give warning of danger by his low and musical whistle. They are difficult birds to shoot. I found them in patches of the so called Tartaric Furze.' Captain Boys states that it is strong on the wing, and that its flights are very protracted. Its note, he says, resembles that of a Dipper (*Cinclus*), finishing with the cluck of a *Chukor*. During flight it emits a shrill whistle somewhat similar to that of the Monaul.'

"It is confined" says Mountaineer, "exclusively to the snowy ranges, or the large spurs jutting from them which are elevated above the limits of forest, but is driven by the snows of winter to perform one, and in some places, two annual migrations to the middle regions; in summer they are only seen near the limits of vegetation. In Koonour (Kunawur) they are common at all seasons from Cheenee upwards, but on the Gangetic hills, from June till August, however much a person wanders about on the

highest accessible places, but few are met with, and I have no doubt whatever, but that nearly all which at other seasons frequent this part, retire across the snow into Chinese Tartary to breed. About the beginning of September they are first seen near the tops of the higher grassy ridges jutting from the snow, and the green slopes above and about the limits of forest. After the first general and severe fall of snow they come down in numbers on to some of the bare exposed hills in the forest regions, and remain there till the end of March. This partial migration is probably made in the night after the fall of snow, as I have invariably found them in their winter quarters early the next morning. It requires a deep fall to drive them down, and some mild winters, except a few odd birds, they do not come at all. The birds on each respective hill seem to have a particular spot for their winter resort, which they return to every year the migration is made.

"The Snow-pheasant is gregarious, congregating in packs, sometimes to the number of 20 or 30, but in general, not more than from 5 to 10; several packs inhabiting the same hill. In summer the few which remain on our side are found in single pairs generally, but across the snow where the great body migrate, I almost always, even then, found several together. They seldom leave the hill on which they are located, but fly backwards and forwards when disturbed. The Ring-tailed Eagle is an inveterate annoyer of these birds; inhabiting such exposed situations where there is nothing to conceal so large a bird from his sight, as he sails along the hill side above them, they at once arrest his attention, and are driven backwards and forwards by this unrelenting tormentor all day long. On the appearance of one of these birds, which fortunately for them are not very numerous, they seldom wait till he makes a stoop, but on his making a wheel near the spot where they are, immediately fly off to another quarter of the hill, the eagle never flies after or attacks them on the wing; so that though he allows them little quietude while near their resort, he only occasionally succeeds in securing one.

"The Jer-moonal never enters forest or jungle, and avoids spots where the grass is long, or where there is underwood of any kind.

It is needless to add that it never perches. During the day, if the weather be fine and warm, they sit on the rocks or rugged parts of the hill, without moving much about, except in the morning and evening. When cold and cloudy, and in rainy weather, they are very brisk, and are moving about and feeding all day long. When feeding they walk slowly up hill, picking up the tender blades of grass, and young shoots of plants, occasionally stopping to snatch up a certain bulbous root, of which they seem very fond. If they reach the summit of the hill, after remaining stationary some time, they fly off to another quarter, alighting some distance down, and again picking their way upwards. When walking, they erect their tails, have a rather ungainly gait, and at a little distance have something the appearance of a large grey goose. They are partial to feeding on spots where the sheep have been kept at nights when grazing in the summer pastures. These places have been called "tatters" by the shepherds, and the grass on them keeps green and fresh long after the rest of the hill is quite dry and brown. They roost on the rocks and shelves of precipices, and return to one spot many successive nights.

"Their call is a low soft whistling, occasionally heard at intervals throughout the day, but more generally at daybreak. It is most common in cloudy weather. The first note is considerably prolonged and followed by a succession of low rapid whistles, and it is by far the most agreeable song of all our game birds. This note is only heard when the bird is at rest; when alarmed and walking away, it sometime utters at short intervals a single low whistle, and when it gets on the wing the whistles are shrill and very rapid. However far it flies, the whistling is continued until it alights, and for a few seconds afterwards, but then slightly changed in tone to a few notes which seem in a strange manner to express satisfaction at being again on the ground. However odd the comparison, I can compare the whistling of these birds when flying and alighting to nothing but the difference of sound produced by the wings of a flock of Pigeons when flying, and when alighting on some spot where they have to flutter a few seconds before they can gain footing.

"The Jer-moonall is not remarkably wild or shy. When approached from below, on a person getting within eighty or a

hundred yards, they move slowly up hill or slanting across, often turning to look back, and do not go very far unless followed. If approached from above, they fly off at once without walking many yards from the spot. They seldom in any situation walk far down hill, and never run except for a few yards when about to take wing. The whole flock get up together; the flight is rapid, downwards at first, and then curving so as to alight nearly on the same level. Where the hill is open and of great extent, it is often for upwards of a mile, at a considerable height in the air; when more circumscribed, as is often the case on the hills they frequent in winter, it is of shorter duration, perhaps merely across or into the next ridge.

"They feed on the leaves of plants and grass, and occasionally on moss, roots, and flowers; grass forms by far the greater portion. They are very partial to the young blade of wheat and barley, when it is first springing up and while it remains short; and should there be an isolated patch on the hill where they are, visit it regularly night and morning. They never, however, come into what may be called the regular cultivation. They are generally exorbitantly fat, but the flesh is not particularly good, and it has often an unpleasant flavour when the bird is killed at an high elevation, probably owing to some of the plants it there feeds upon. Though I have spent many summers on the snowy ranges, I never found the nest or eggs, but in Thibet I often met with broods of young ones newly hatched. There were, however, several old birds, and probably more than one brood of chicks, so I could form no correct idea of the number in one brood. They are hardy birds, and easily kept in confinement, but though they will eat grain, I doubt if they would live long without an occasional supply of their natural green food of grass and plants. They may be kept with the least trouble in large cages, the bottoms of which instead of being solid are made of bars of wood or iron wire, so that the cages being put out on the grass, the birds may feed through the interstices.

The eggs which have been found by travellers are about the size of those of the Turkey, but, like those of the grouse, are of a more lengthened form; their ground color clear light olive, sparingly dotted over with small light chesnut spots."

Another species of Snow-cock occasionally obtained by Indian sportsmen is *Tetraogallus tibetanus*, Gould, figured in the Birds of Asia, pt. V., pl. 4; but as it has not, I believe, been procured on this side the Snowy range, I shall only briefly describe it without giving it a place among the Birds of India. It is the smallest of the group, only measuring 22 inches; wing 10¼; tail 7; tarsus 2½. It has the head and neck grey; the ears white; the upper plumage generally freckled with buff, grey, and black, which latter color forms conspicuous dashes; the primaries grey, secondaries broadly edged externally with white, forming a marked wing-band; tail rufous brown; beneath, the chain, throat and breast are white, separated from the grey of the head and neck by a dusky freckled line, and with a gorget of freckled grey and buff; the abdomen white; the flanks and lower belly with dashes of black, and the under tail-coverts entirely black. Bill horny; legs red; called *Huinwal* in Kumaon.

It has been found in Ladak, Rukshu and other places across the Himalayas. Major James Sherwill informed me that he had seen a bird of this genus close to the snows in the Sikim Himalayas, which he was inclined to identify as the present species, and if so, it must be included among the Birds of India; but, as he did not bring specimens, I must content myself with the above notice. Lt. Speke informed Mr. Blyth that it was very tame and fearless, and could be approached so near as to be knocked down by a stone. Lt. Forbes, however, assured me that those which he procured were not quite so accessible, probably having been occasionally shot at and disturbed.

The other species of *Tetraogallus* are *T. caucasicus*, Pallas; (*Caspius*, Gmelin; *Lophoph. nigelli*, of Jardine and Selby, Illust. Orn. pl. 76) figured by Gould, Birds of Asia, pt. V., pl. 1. This is found in the high mountain ranges of Persia. *T. altaicus*, Gebler, figured by Gould in the same number at plate 3, more resembles *T. tibetanus*, but is larger, wants the white wing-band, and the lower abdomen and thigh-coverts are black. It is from the Altai mountains. *Chourtka alpina* of Motchoulski is considered by Gould to form a fifth species of this genus.

Gen. LERWA, Hodgson.

Syn. *Tetraoperdix*, Hodgson.

Char.—Bill stout, short; orbits plumed throughout; wing moderately long, pointed, of great expanse, the 2nd quill longest; tail of fourteen feathers, rather long and strong; tarsi feathered a short way down. Male with short spurs.

This genus, composed of a single species peculiar to the Himalayas, combines the colors of a Grouse with the naked leg of a Partridge. Gould says that it assimilates in a nearly equal degree to a Grouse, Francolin, and Partridge.

817. **Lerwa nivicola**, HODGSON.

Madras Journ. Lit. 1837—Perdix Lerwa, HODGSON P. Z. S. 1833—HARDWICKE Ill. Ind. Zool. 2 pl. 44 f. 1—GOULD, Birds of Asia, pt. VII., pl. 8—*Lerwa* in Nepal, *Quoir-monal*, or *Koor-monal*—Also *Gulabi*—and *Jer-titar*, *i. e.* Snow Partridge, in various hill dialects—*Bhyr* or *Bhair* at Simla—*Janguriya* in Kumaon.

THE SNOW PARTRIDGE.

Descr.—Head, neck, and the whole plumage, with the wings and tail minutely barred with black and greyish or buffy white, more grey on the head, neck, rump and upper tail coverts, and tinged with chesnut on the sides of the neck, shoulder and wing-coverts; quills dusky brown, narrowly freckled with buffy white on their outer edges; the secondaries broadly tipped with white; tail dusky with speckled bars of grey and rufous, and the feathers black shafted; beneath, the chin is greyish; the throat, breast, and upper part of the abdomen deep chesnut red, with dashes of buff or whitish on many of the feathers, especially on the flanks; lower abdomen, vent, and thigh-coverts barred like the upper part, but with a tinge of rufous; lower tail-coverts chesnut-red, with buffy white tips.

Bill bright red; irides dark brown; legs and feet red. Length 15 to 16 inches; extent 24; wing 8; tail 4; tarsus 1¼. Weight 18 oz.

The female is a trifle smaller than the male, and wants the spurs, but does not otherwise differ.

'This Game-looking bird appears peculiar to the upper Himalayan region near the snows, several travellers having stated that they had not seen them on the Thibet side of the hills. It is found however along the whole extent of the Himalayas, having been found in the extreme North-west as well as in Sikim. Hodgson states that "these birds have the habits and manners of *Tetrao* rather than *Perdix*. They are gregarious in coveys, nestle and breed under jutting rocks, feed on the aromatics, seeds, and insects found in the proper Himalayan region, which they never quit, and amid the glaciers of which they take impenetrable refuge when disturbed. Trees they wholly avoid, and are usually found on the flatter and quasi-heathery ledges which form steps from the snow-bound summits of the Himalayas. The Lerwas moult, I think, twice a year, but certainly in autumn, their plumage being most imperfect in August. They are splendid game, with a vigorous flight, shy, and in size and strength equal to a Grouse. Their flesh is white, succulent and possessed of a very high flavour."

Dr. Hooker observed it in Sikim, and calls it a small gregarious bird which inhabits the loftiest stony mountains, and utters a short cry of *quiok, quiok;* in character and appearance, it is intermediate between Grouse and Partridge, and is good eating, though tough.

"In general haunts and habits," says Mountaineer "this bird much resembles the Snow-pheasant, frequenting the same high regions near the Snow in summer, and migrating to the same bare hills and rocks in winter. The Pheasant, however, prefers the grassy slopes and softer parts of the hill, the Partridge the more abrupt and rocky portions, where the vegetation is scantier, and more of a mossy than grassy character. They are also more local, and confined more to particular spots, and do not, like the pheasant, ramble indiscriminately over almost every part of the hill. They are generally remarkably tame; when approached, they utter a harsh whistle, and if they keep still, it is often several moments before they can be distinguished, their plumage much resembling and blending with the general colour of much of the ground they

frequent; if approached from above, they fly off at once, if from below they walk away in the opposite direction, calling the whole time, and often cluster together on the top of some large stone in their way. Their flight exactly resembles that of the Pheasant, and the whistle when on the wing being nearly the same, and the birds having the same white on the wings, they could hardly be distinguished when flying past at a distance, but from the size. They seldom fly far, and if followed and put up again, often fly back to the spot where first found. At times they seem unwilling to get up at all, and several shots may be fired at them before they take wing. I once found a flock on a steep ledge of rock in the forest, a few days after a severe snow storm which had driven them down to their winter quarters; they were a little scattered and resting on the projecting ledges, and I fired eleven shots within twenty yards, without one bird attempting to get up. At one bird I fired twice without its moving at all.

"The Snow-partridge feeds on moss and the tender shoots of small plants. It is always fat, and the flesh is tender and well flavoured, and if kept a few days, something like Grouse. They breed near the limits of vegetation, but I have not seen the nest or eggs. I have often met with the young chicks, sometimes a single pair of old birds with their young brood, and sometimes several old birds and two or three broods of chicks, apparently six or seven in a brood. When alarmed, the parent birds exhibit all that distressful anxiety so common with their tribe, and endeavour by drawing the attention of the intruder to themselves to decoy him from the spot. They do not counterfeit lameness like some, but walk away before him, and call out in a most plaintive manner. The young squat close on the ground, or creep beneath the stones, for the herbage where they breed is never sufficiently high enough to hide even the smallest bird."

Partridges.

We now come to the true Partridges, which, however, form several distinct groups, separated alike by habits, form, and coloration. In India there are representatives of the "Francolins" and the 'Red-legged Partridges' of Europe, and a true Partridge

occurs on the further side of the Himalayas; there are, besides, three other groups, the Grey or Spurred Partridges, peculiar to the continent of India; the Wood Partridges, confined to the Himalayas, in India proper, but extending through Burmah into Malayana; and the Bush-quails, peculiar to India.

1*st.* *Francolins* or Meadow Partridges.

Gen. FRANCOLINUS, Stephens.

Syn. *Attagen*, Keys and Blas.—*Hepburnia*, Reichenb.

Char.—Bill moderate or somewhat long, stout, slightly curved at the tip; tail of fourteen feathers, somewhat lengthened, even, or very slightly rounded; tarsi of the male with strong but blunt spurs.

The Francolins may be said to be Partridges with more lengthened bill and tail, slightly spurred, and with a peculiar and rich coloration. The group may be considered an Asiatic form, extending to the south of Europe, and to the north of Africa. India possesses two species, and there is another in Burmah; they do not associate in coveys, and Blyth states that they appear to him to have more of the general habits of Pheasants than of Partridges, but to this I must demur. Gould considers them allied to *Ceriornis* in the general style of coloring, the short spur, and the form of the bill.

818. **Francolinus vulgaris**, STEPHENS.

BLYTH, Cat. 1500—GOULD, Birds of Europe, pl. 259—Tetrao francolinus, LINNÆUS—Perdix Hepburniæ, GRAY, HARDWICKE, Ill. Ind. Zool. pl. 55, (the female)—F. Henrici, BONAP.—*Kalatitar*, or *Titir*, H., said to be called *Gaghar* about Benares.

THE BLACK PARTRIDGE.

Descr.—Head, cheeks, and throat, deep black; the top of the head and nape edged with rufous, and with some white spots on the sides of the occiput, forming a pale line; ear-coverts pure white; a broad collar of fine chesnut red passes round the whole neck; upper part of the back black, the feathers edged with rufous and white tipped; the middle and lower back

rump, and upper tail-coverts finely barred black, and whitish, or grey; wings with the coverts black, with broad bay or rufous edges, and the quills barred with rufous and black; tail black, the middle feathers barred with black and grey, on the upper parts; the lateral feathers being similarly barred at their base only; plumage beneath, from the rufous collar, deep black, more or less banded on the lower part of the abdomen with white, and the flanks of the breast and abdomen spotted with white; thigh-coverts and under-tail-coverts chesnut.

Bill black; irides brown; legs yellowish red. Length 13 to 14 inches; extent 20; wing $5\frac{3}{4}$; tail $3\frac{1}{2}$. Weight 13 to 15 oz.

The female differs in wanting the black head and neck of the male, which is more or less rufous, mixed with brown, the throat and sides of the neck being white, and a dusky band surrounds the white portion of the ear-coverts; the back and wings are dusky, with pale rufous edges, whitish on the wing; the back, rump, and upper tail-coverts, are barred pale rufous and dark brown; the tail feathers blackish, with pale bands; the medial pair brown banded; beneath, from the throat, the plumage is white with black spots, longitudinal and arrow-shaped in front, becoming more transverse on the flanks and lower abdomen.

Length $12\frac{1}{2}$ to 13 inches; weight 12 to 13 oz.

The males have a short blunt spur, tubercular at first.

The black Partridge is found throughout the whole of Northern India, from the Himalayas to the valley of the Ganges, but not that I am aware of, extending to any distance beyond the valley of the Ganges until above Allahabad, beyond which it passes to the Punjab, and southwards, through Rajpootana to Sindh and perhaps to Goozrat. Eastwards it extends through Dacca to Assam, Sylhet and Tipperah, but I have seen no record of its occurrence further south in this direction, and it is replaced in Burmah by an allied species. It occurs south of the Ganges between that river and the Hooghly, and I have seen notices of the black Partridge having been shot in Midnapore and Cuttack, but it is certainly rare, south of the Ganges. Various notices appear in several pages of the Bengal Sporting Magazine of Black Partridges occurring in the Saugor and Nerbudda territories, Mhow and Bun-

delkund; but in these instances, it has certainly been confounded with the nearly related Painted Partridge, as the Black Partridge does not, to my own knowledge, occur for many miles north of Mhow, Saugor or Jubbulpore, and I suspect not till the valley of the Jumna is reached. Adams says that the Black Partridge is plentiful in Bombay and Bengal, but as he does not give the Painted Partridge at all, he has in some instances, at all events, confounded it with that bird. The Black Partridge extends along the valleys of the Himalayas for some distance in the interior, but not ascending high; and I observed it on the Khasia hills at nearly 4,000 feet of elevation. The Black Partridge from Sindh is put as distinct by Bonaparte under the name of *F. Henrici*, and a drawing of the Sindh bird in Sir A. Burnes' collection gave some color to the separation; but Sir B. Frere, to whom I applied, having sent several specimens from Sindh, they proved to be perfectly identical with the Partridge of Bengal. Out of India the Black Partridge inhabits Northern Africa and the South of Europe, especially Malta, Sicily, and probably part of Western Asia.

The Black Partridge frequents, by preference, grass meadows near water, also cultivated fields of corn, mustard or pulse, and any patch of moderately high, green herbage, also occasionally jhow jungle; and it is not unfrequently flushed in moderately long grass interspersed with bushes, even at some little distance from water. It never associates in regular coveys, though several may be flushed not far from each other; and, indeed, it is generally to be found in pairs at all seasons.

From January to August, the call of the Cock-bird may be heard, a harsh sort of cry which has been variously rendered by sounds in different languages; but these imitations, though intelligible to those who have heard the call, fail to give anything like a correct idea to a person who has not had the opportunity of hearing it. The Mussulmans say that it repeats the pious words, '*Sobhan teri kudrut;*' others say it calls out '*Lussun, piaz, udruk,*' or garlic, onions, ginger. Adams syllabizes it as '*Lohee-uha-which-a-whick*', and some one else puts it as '*juk-juk, tee-teetur.*' One writer calls it like the harsh grating

blast of a cracked trumpet; but it is far from being a loud call, though sufficiently audible for a great distance. This call is almost always uttered from a slight eminence, a bank, ant hill, or clump of earth, and where it abounds, answering cries may be heard from all sides. It generally calls much after rain, or after a heavy dew.

The hen Partridge breeds from May to July, laying ten or twelve eggs (sometimes, it is stated, as many as fifteen) of a pale bluish white colour, according to some writers, but those I have seen were pale greenish, when first laid; and she usually has her nest in the grass, sometimes in an Indigo field, and occasionally in a Sugar-cane field.

In the cold weather, after the young have flown and separated from their parents, they may be found scatterd over a greater expanse of country than in the hot weather and rains, and are often to be found in fields far from water. This Partridge is stated occasionally to perch on and to roost on trees, but this is certainly a rare habit with this species, though not uncommon with the Painted Partridge.

The Black Partridge is strong on the wing, but flies steadily and affords a fair shot. Its pursuit is a favorite sport in many parts of the country where it is at all abundant. It is stated in the *Bengal Sporting Magazine*, for 1841, that seventy-five brace have been bagged in one day by one gun, near Kurnal in the Upper Provinces, but it is now everywhere more scarce than it used to be formerly. It is tolerably good eating, especially when kept for a few days and eaten cold. In some parts of the country tippets used to be made of the beautiful black, white-spotted feathers of the lower plumage, and were in much request, but they are rarely procurable now.

819. **Francolinus pictus**, Jard. and Selby.

Perdix, apud Jardine and Selby, Ill. Orn. pl. 50—Blyth, Cat. 158—Sykes, Cat. 158—Jerdon, Cat. 272—*Kala-titar*, H. and Mahr.—*Kakkera kodi*, Tel.

The Painted Partridge.

Descr.—Forehead, lores, face, broad supercilium, and ear-coverts, ferruginous-chesnut; the top of the head dark brown with pale

edgings; the neck all round pale ferruginous; the upper part of the back and scapulars deep brown, the feathers edged laterally with creamy white, and this gradually passing into the markings of the wings, which are chesnut with black bands; the lower back, rump and upper tail-coverts are beautifully marked with undulating lines of black and white; tail deep brown, the feathers finely cross-barred at their base; beneath, the throat is white, with longitudinal dark lines; the whole of the rest of the lower surface variegated black and white, each feather being white, with two dark cross-bands, and the shaft and tip black; these dark bands gradually narrow towards the vent; under tail-coverts chesnut, the feathers of the flanks and sides of the rump are tinged with pale ferruginous.

Bill blackish; irides dark brown; legs yellow red. Length 12 inches; wing 6; tail 2¾; tarsus 1¾. Weight 11 to 13 oz.

The female differs in having a somewhat ferruginous tinge beneath, and in the throat being more or less rufous.

The Painted Partridge may be said to take the place of the Black in Central and part of Southern India. It is found throughout Bundelkund and the Saugor and Nerbudda territories, and thence south through Nagpore and the Deccan, to about N. L. 15°, gradually becoming more scarce southwards. I have heard of its occasional occurrence near Bangalore still further south, but where the land is higher and the climate cooler. West, it extends into Candeish, and perhaps Guzerat, but is not known on the Malabar Coast; and eastwards, it is found throughout Chota Nagpore and adjacent lands to the more open parts of the Northern Circars, as far as Cuttack, but far more rare there than in the west of the Peninsula. I have found it most abundant in the Deccan near Jalna, and at Mhow; less so in Saugor, Nagpore and Hyderabad.

Like its northern congener, it delights in grassy plains and fields, but more affects open, dry, and raised plains with scattered bushes, than the low-lying, damper meadows that the Black delights in. It is always, when the grain is ripe, as well as at other times not unfrequently, to be found in wheat fields and other cultivated lands, and occasionally in open and grassy glades in

the midst of thin forest jungle. It chiefly occurs in pairs, now and than several, not far from each other. Early in the morning, the cock-bird may be heard uttering his peculiar guttural call or broken crow, *Chee-kee-kerray—Chee-kee-kerray*, which can be heard a very long way off, though by no means loud, and is answered on all sides. On approaching the spot whence the sound proceeds, if carefully looked for, he may be seen seated on the stump of a tree, or a thick bush, or an ant-hill or other elevated spot; but when he finds himself discovered, he slinks down, and runs off in a way that puzzles dogs much.

The female breeds from June to August, laying seven or eight eggs of a creamy or smoky white, generally near the shelter of some bush. "The poults," remarks a writer in the *Bengal Sporting Review*, "begin to call soon and chirrup like Crickets." When the grass is not too high, the Painted Partridge affords very fair shooting with a steady pointer, as also in the wheat fields in November and December, when the birds have scattered. I have seen this bird perch on a low tree, but very rarely, and only when disturbed by a dog; certainly not so commonly as is implied by a writer in the *Bengal Sporting Magazine* for 1841. This Partridge is very fair eating, especially when kept long enough and eaten cold.

Francolinus Phayrei, Blyth, (if distinct from *F. pintadeus*) is common in all upper Burmah as at Thyet-Myo, and has a very similar call to the Painted Partridge, but is more given to frequent grassy spots among jungle. *Tetrao pintadens*, Scopoli, (*perlatus*, Temm.) from China, has been separated by Reichenbach as *Margaroperdix*, but on what grounds it would be difficult to say.

2*nd*.—Rock or Sand Partridges.

Gen. CACCABIS, Kaup.

Syn. *Perdix*, Bonap.—*Chacura*, Hodgson, postea *Pyctes*.

Char.—Bill somewhat lengthened, stout, red; tarsi of male with a blunt spur, red; tail of twelve or fourteen feathers, not quite concealed by the upper tail-coverts; a small nude patch behind the eye; plumage not mottled.

The Red-legged Partridges form a well marked group, spread over the temperate and warmer parts of Europe, Western and

Central Asia, and the north of Africa, including Madeira and the Canary islands. They are well characterized by a plain unmottled plumage with some rich bands on the flanks, and, as Blyth remarks, they have the desert-coloring in some degree. They affect rocky and hilly ground, in preference to cultivated lands, and associate more or less in coveys. Gray makes a subfamily *Caccabinæ* of this and *Ammoperdix*, but rather strangely joins with them *Tetraogallus* and *Lerwa*. Bonaparte retains the generic name of *Perdix* for this genus, as it was undoubtedly the Perdix of the Ancients.

820. **Caccabis chukor**, GRAY.

Perdix, apud GRAY, HARDW., Ill. Ind. Zool. 1. pl. 54—BLYTH, Cat. 1503—GOULD, Cent. Him. Birds, pl. 71—P. græca, var. of several authors—*Chukor*, H.

THE CHUKOR PARTRIDGE.

Descr.—Plumage above pale bluish or olive ashy, washed with a rufous tinge; lores black, and a white band behind the eye; ear-coverts rufous; wings reddish ashy, the coverts tipped with buff, and the primaries narrowly edged with the same; tail ashy on the central feathers, the laterals tinged with rufous; face, chin, and throat, fulvous or rufous, surrounded by a black band which begins at the eye, and forms a sort of neck-lace round the throat; below this the neck and breast are ashy, changing to buff on the abdomen and under tail-coverts; flanks of the breast and belly beautifully banded, each feather being ashy at the base, with two large black bands, the terminal one tipped with fine maronne, and the space between the bands creamy white.

Bill red; irides yellowish white; legs and feet red. Length 15 to 16 inches; extent 24; wing $6\frac{3}{4}$; tail $3\frac{1}{2}$; tarsus $1\frac{3}{4}$; bill at front 1; weight 18 oz. to $1\frac{1}{2}$ lb.

The female closely resembles the male, but is slightly smaller, and wants the spurs.

This fine Partridge is so very closely allied to *Caccabis græca* of the South of Europe, Africa, and Western Asia, that it has been considered to be a climatic variety of that species, but most systematists keep it distinct. It appears to differ in the less ashy

tint of the European bird, which moreover appears to have the dark collar of greater extent, and in our bird having the chin and throat always more or less rufous.

The *Chukor* is found throughout the Western Himalayas, from the lowest range to the Snows, and passing over into Thibet, but it does not extend so far east as Sikim. It is also met with in the salt range of the Punjab, and its more alpine regions, passing into Affghanistan. It prefers bare and rocky hills with low scrab or jungle, near cultivation.

"In our part of the hills" says Mountaineer (*i. e.* in the North-western Himalayas) "the *Chuckore* is most numerous in the higher inhabited districts, but is found scattered over all the lower and middle ranges. In summer they spread themselves over the grassy hills to breed, and about the middle of September begin to assemble in and around the cultivated fields near the villages, gleaning at first in the grain fields which have been reaped, and afterwards during winter in those which have been sown with wheat and barley for the ensuing season, preferring the wheat. A few straggling parties remain on the hill sides where they breed, as also in summer many remain to perform the business of incubation in the fields. In autumn and winter they keep in loose scattered flocks, very numerous, sometimes to the number of forty or fifty, and even a hundred. In summer, though not entirely separated, they are seldom in large flocks, and a single pair is often met with. They are partial to dry stony spots, never go into forest, and in the lower hills seem to prefer the grassy hill sides to the cultivated fields. This may probably be owing to their comparatively fewer numbers, as I have observed that many others of the feathered race are much shyer and more suspicious of man when rare, than those of the same species in places more numerous. Their call is a kind of chuckling, often continued for some time and by a great many birds at once. It is uttered indiscriminately at various intervals of the day, but most generally towards evening.

"The *Chuckore* feeds on grain, roots, seeds, and berries; when caught young, it becomes quite tame, and will associate readily with domestic poultry.

"From the beginning of October, *Chuckore* shooting, from the frequency and variety of the shots, and the small amount of fatigue attending it, is to one partial to such sport perhaps the most pleasant of any thing of the kind in the hills. About some of the higher villages, ten or a dozen brace may be bagged in a few hours. Dogs may be used or not at the discretion of the Sportsman; they are not at all necessary, and if at all wild are more in the way than otherwise."

"The male," says Major Brown,* "is very bold, and is tamed for the purpose of fighting. In a domesticated state, he makes no hesitation in offering battle to every animal, and pecks very fiercely, always searching for a tender part; the nose of a dog, or the naked feet of the native servants immediately attract his attention, and he soon makes the object of his attack fain to run." "When reclaimed" says another writer in the same periodical "this bird is peculiarly bold, fearless, and entertaining. It trots about the house, and is as familiar as a little dog. It is amusing to see its antipathy to quick motions in others. It will follow a servant who hurries into a room, pecking at his heels, scouring away when he attempts to turn upon it. It is still more persevering against the poor wight who moves backwards and forwards as he pulls the punkah. Half asleep at his task, he is roused by a fierce attack on his legs. He attempts to continue his work, and at the same time to drive away the intruder, but it is of no use; and he is at last obliged to call for assistance to rid him of his persecutor."

The Hen-chukor lays from eight to fifteen eggs, of a creamy white, according to one writer; pure white according to Adams; and the male bird is said to remain near the nest during incubation, and may be heard calling all day, its call much resembling that of the domestic hen, being a '*cuc-cuc*' often repeated, and the Cashmeeres call it *kau-kau* from its cry. The Affghans call it the Fire-eater. It is considered to be excellent eating. In Ladak it is said to be numerous in the cultivated part of the country, and is there called *Nek-pa*.

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* Beng. Sport. M g.

Caccabis rufa, the Red-legged Partridge of France and Western Europe, has been partly naturalized in England, and drives away the common Partridge. *C. petrosa* has been unnecessarily separated by Kaup as *Alectoris*.

Close to the red-legged Partridges come the Sand-partridges.

Gen. AMMOPERDIX.

Char.—Of small size; bill somewhat lengthened, red; wings long; tarsus wholly devoid of a spur or even of a knob. Otherwise as in *Caccabis*.

The Sand-partridges may be said to be simply dwarf Chukors, to which they are allied in color, habits, and geographical distribution. Only two species are known, both found in Western Asia, one of which extends into the North-western limits of our region.

821. **Ammoperdix Bonhami**, GRAY.

Perdix, apud GRAY, P. Z. S.,—GOULD, Birds of Asia, pt. III., pl. 4—figured Beng. Sport. Mag. 1843—P. griseogularis, BRANDT. —*Sisi*, H. in the Punjab.

THE SEESEE PARTRIDGE.

Descr.—Male, above pale isabella brownish, finely freckled with dusky; the crown of the head and cheeks grey; forehead and a narrow line over the eye black; lores and ear-coverts silky white, rufous posteriorly; beneath this a narrow black line; rump and upper tail-coverts much speckled with black; primaries dusky within, isabella brown on the outer webs, with dusky pencillings, and all but the first, barred on their outer webs with whitish; tail chesnut brown, paler at the tip, and freckled with black; beneath, the throat is greyish white, the breast delicate grey, and the sides of the neck grey with numerous white spots, and a few black specks; breast pale rufous isabelline or vinaceous; the feathers of the flanks whitish tinged with vinaceous, and dashed with rufous and dark brown; lower tail-coverts pale chesnut.

Bill fleshy, (brownish yellow according to Adams); irides hazel brown; legs and feet olive yellow. Length 10 inches; wing 5; tail $2\frac{1}{2}$; tarsus $1\frac{1}{8}$; bill at front $\frac{5}{8}$.

The female differs, according to Gould, in having the black markings of the head replaced by freckled black and white; the

general colour more grey and the wings more freckled. According to Blyth, she wants the ashy crown of the male, and is minutely mottled all over, both above and beneath.

This small species of Partridge was named almost simultaneously by Gray and Fraser after the first gentleman who had sent specimens to Europe. It is closely related to *A. Heyi*, but is somewhat larger, and that species wants the white spots on the sides of the neck. The females are said to resemble each other very closely. One point of difference of the two species mentioned by Gould, *viz.*, the colour of the legs, is contradicted by Adams, who says that the color of the legs of *Bonhami* is a 'lighter brownish yellow than the bill.'

The Seesee, as this small Partridge is named, is only found in the Punjab, in the Salt range of hills, more abundant across the Indus on the Suleiman range, near Attock, and in the Khyber and Bolan passes; and it is still more common in Affghanistan and Persia, whence the original specimens were sent. It is there called *Tee-hoo*. Gould states that it was also brought from Thibet by Lord Gifford. Adams says that it is not found further south than the Salt range; but a writer in the *Bengal Sporting Review*, on the game of Sindh, distinctly indicates it under the name of the Rock or Barbary Partridge as found across the Indus. It frequents rocky ground with brushwood here and there, and is often seen in company with the Chukor which it much resembles in habits; is found in coveys which when sprung rise with a startling noise, and feeds much on a kind of wild Thyme. The flesh is said to be delicious. The name *Seesee* is given from its call. Theobold found the eggs, twelve in number, of a clear cream colour, laid in a slight hollow among stones in the hills.

The other species, *A. Heyi*, is also figured by Gould, in Birds of Asia, pt. III., pl. 5. It is found in Western Asia, Palestine, Arabia, &c.

3*rd*.—Grey or Bush Partridges.

The Grey Partridges of India come under this head; they are somewhat similar in coloring to the English Partridge, but differ in being strongly spurred.

Gen. ORTYGORNIS, Reichenbach.

Syn. *Plectroperdix*, Blyth.

Char.—Bill lengthened, tip well turned over; legs red, with one strong and sharp spur, occasionally two; tail rather short, of twelve feathers, wings moderate.

This form, as far as we know at present, is peculiar to the Indian continent, but some of the African Partridges appear nearly allied to it. Only two species are known, very similarly coloured above, but differing greatly in size and haunts. They are bold birds, of truly perdicine habits, having a great tendency to form coveys; but they run much and very rapidly, and frequently perch, as well on bushes and low trees, as on high reeds.

822. Ortygornis Ponticeriana, GMELIN.

Tetrao apud GMELIN—SYKES, Cat. 159—JERDON, Cat. 273—BLYTH, Cat. 1506—Perdix orientalis, GRAY—HARDWICKE, Ill. Ind. Zool. 1. pl. 56, f. 2—*Titar*, H.—*Gora titar* of some—*Kawunzu*, Tel.—*Koudari*, Tam.

THE GREY PARTRIDGE.

Descr.—Head above olive brown, rufous on the forehead, over the eyes, and on the nape; lores and face also rufous, with black specks; ear-coverts silky hair-brown; upper plumage, including the wing-coverts, upper tail-coverts and central tail-feathers, speckled brown, each feather being rich red brown with three bars of creamy yellow, and paler and somewhat olive brown at the tip; primaries pale brown; outer tail-feathers rich chesnut brown, with a dusky brown terminal band, pale tipped; beneath the chin and throat are whitish with small dark brown spots, forming a triangular mark; the rest of the lower plumage ochreous white or creamy, most pronounced on the breast, and with numerous minute cross-bars of brown, somewhat broader on the breast and sides of the neck, where it mingles with the upper plumage; lower tail-coverts ferruginous.

Bill dusky plumbeous; irides hazel brown; legs dull red. Length about 12½ to 13 inches; wing 5; tail 3¼; tarsus not quite 2; weight 11 to 12 oz.

The male is strongly spurred, generally only one spur on each leg, occasionally two, the second at the base of the first. Females only differ in not being spurred, and in being a trifle smaller. Young birds have the chin and throat strongly tinged with fulvous.

The Grey Partridge is found throughout the greater part of India, but not frequenting mountainous or forest-clad districts, and it is totally wanting throughout the Malabar Coast, as far at all events as N. L. 17°—18°. It is also very rarely met with north of the Ganges, although recorded as a bird of Nepal by Hodgson, and it is replaced generally in Bengal by the next species. It is not known in Assam nor in any of the countries to the Eastward. Westward it is very abundant in Sindh, and some parts of the Punjab, and it is stated to occur in Persia, as Mr. Blyth informed me, where known as '*Jirufti*.'

It frequents alike bush-jungle, and cultivated lands, being often found in gardens and compounds; and very generally near villages, concealing itself in hedge-rows and thickets. It associates in coveys of varied number, from five to fifteen, is often very difficult to flush, running for a great distance, and with amazing speed, and taking refuge in thick bushes and hedges, whence driven with difficulty. When flushed, it rises with a loud whirr, flies very strongly, but does not take long flights. It frequently perches on low trees and shrubs, and on the branches of thick *Euphorbia* hedges. Its call is a peculiar loud shrill cry, and has, not unaptly, been compared to the word *Pateela-pateela-pateela*, quickly repeated, but preceded by a single note uttered two or three times, each time with a higher intonation, till it gets, as it were, the key note of its call.

This Partridge breeds, chiefly in the dry weather, from February to May or June, the hen-bird laying usually eight or ten eggs, of a cream or stone colour, under a hedge-row or thick bush. One writer in the *Bengal Sport. Review* says, from twelve to eighteen eggs, greyish speckled with red and brown. It occasionally, it is stated, breeds in grain fields, and many nests are said to be destroyed in reaping the crops. "The young," says the same writer, "soon get strong on the wing, and attempt to call when only five

days old." In flight this bird is not unlike the English Partridge, and I have known many sportsmen who considered them to be the same bird. It is considered to be a stronger flying bird, and to be more difficult to bring down.

Though generally dispersed throughout the country, they are seldom so plentiful as to induce Sportsmen to go out after them alone, but a few generally form part of the bag after a day's shooting in Southern and Western India. "I have found Greys with my pointers" remarks a writer in the *Beng. Sport. Mag.* (XIV. 90) "always in a steady way, but subject of course to the peculiar habit of that skulking, running bird; fond of bushes, and strong on the leg, they will walk or dodge before the dogs and sportsmen in a tiresome way, tantalizing and trying to the temper of both man and beast; still the dogs will be staunch to their trail, drawing on them, and standing until they are sprung." It is not, in general, considered good eating, being usually dry and insipid. One writer, however, in the above quoted Periodical, says, "In this respect it has not had justice, being, in October and November, superior to our Black Partridge, but in this country game is so much spoiled in cooking that there is no knowing what to make of it, as it is invariably roasted as dry as a stick." The best way of cooking dry game in this country is the Gypsy or Mexican fashion of enclosing it in a lump of good fire-clay, and roasting it in the fire. Birds (and hares) otherwise dry and insipid, come out of their case juicy and tasty.

When not disturbed much, and near villages, the Grey Partridge is by no means a shy bird. It is easily tamed, and may be brought to follow his owner about like a dog, even through a crowded street. It is very commonly kept by Mussulmans in small cages, sometimes for fighting, as it is highly pugnacious, and fights with great spirit and obstinacy. Partridges with double spurs are esteemed the most for fighting. It will readily utter its call when spoken to, and is generally liberated on a grass plain for a run every morning, returning to its cage when called upon. It is also used as a decoy for wild birds, a tame bird being put down near a covey and made to call, when he is invariably met by a cock-bird, and a battle ensues. The Bird-catcher approaches

cautiously and seizes the wild bird as it is heedlessly engaged in the fight.

This Partridge feeds on grain and seeds of all kinds, and is very partial to small grasshoppers, white ants and other insects. It is often accused of being a dirty feeder when living near villages, but I am inclined to think unjustly.

823. **Ortygornis gularis,** Temminck.

Perdix, apud Temminck—Blyth, Cat. 1505—Hardwicke, Ill. Ind. Zool. 1. pl. 56, f. 1.—*Khyr*, or *Kyah* or *Kaijah*, H. —occasionally *Ban-titar*, 'Chikore' or 'Bengal Chikore' of sportsmen in Bengal.

The Kyah Partridge.

Descr.—Top of the head olive-brown; supercilium, lores, and a streak below the eye, pale buff or fulvous, and a dusky line passes through the eyes to the upper part of the ear-coverts; upper plumage brown, barred with narrow cross streaks of whitish or fulvous, edged black, and the shafts of the feathers mostly white, except those of the hinder part of the back and rump; primaries plain brown externally, passing to ferruginous brown within; tail ferruginous except the central feathers; beneath, the chin and throat are bright ferruginous brown; the rest of the lower plumage, with the sides of the neck, are brown, with white streaks, edged by black, which on the breast and belly become large dashes or blotches, giving a handsome character to the plumage; lower tail-coverts ferruginous, and the under surface of the wings mostly ferruginous also.

Bill blackish; irides dark brown; legs dull red. Length 15 inches; extent 22; wing $6\frac{3}{4}$; tail 4; bill at front nearly 1; tarsus $2\frac{1}{8}$; weight 17 oz. to 1 lb. 6 oz.

The male is furnished with a strong and sharp spur, $\frac{1}{2}$ inch long. The female is a trifle smaller, and wants the spur. Length $13\frac{1}{2}$ to 14 inches.

This fine bird in its upper plumage, very closely resembles the common Grey Partridge, but the lower surface is very different,

being longitudinally dashed with white instead of narrowly barred; it is nearly double the size, and has very different distribution and haunts.

The Kyah Partridge is found throughout Bengal, from Tirhoot and Goruckpoor to the Sunderbuns, and extending eastwards into Assam, Sylhet, Cachar and Tipperah. South of this it is not recorded, but it may occur in Chittagong. In the Western Provinces of Bengal, it is chiefly found on the north bank of the Ganges, crossing in a few suitable localities from Monghyr to Rajmahal, and also found between the Bhagirutty and the Ganges; but not extending to Kishnagur, it is said, nor to the vicinity of Calcutta. It is stated that it used to be found along the banks of the Roopnarain River, but is so no longer. It is found up to the base of the Himalayas, and I have heard of its occurring in the Oude Terai, but it apparently does not go further west.

The favorite grounds for this Partridge are thick beds of reeds and long grass along the banks of rivers, jheels, and water-courses; and especially in those swampy patches of reeds where the creeping Rose-bushes form thickets impenetrable to ought but an Elephant, though hardly "frequenting swampy churs and reedy waters, the same as the Bittern, Snipe and Heron" as one writer states. "The strongest depths" says a writer in the *Beng. Sport. Mag.* "whether in patches, or in continuous, wavy, thick grass, or seas of jungle hold them." If cultivated land be near, so much the better, for this Partridge loves to feed on open patches of Mustard, Dhal and other pulses, and indeed during the cold weather may frequently be found in the fields at all hours of the day. Occasionally it resorts to dry grassy plains with scattered bushes, but much more generally grassy churs near water. During the rains, and when some of its usual haunts are flooded, it betakes itself to the fields, hedgerows and bush jungle, and at this time affords good sport even to the Sportsman on foot; and, in some localities when flooded, the Kyah may be seen flying from tree to tree

This Partridge is generally, except when breeding, met with in somewhat scattered coveys, which rise three or four at a time with a cackling scream; they fly strong and straight with outstretched

neck, seldom going to any distance, but dropping into some thick covert, and thence often dislodged with difficulty; for it runs much, even among the thick reeds. It very generally, however, especially in swampy thickets, perches on the high reeds, and generally roosts there.

The call of the Kyah is quite similar in character to that of the Grey Partridge, though in a somewhat different tone, and not uttered so hurriedly, and the preliminary chuck is exactly that of its congener. It is one of the earliest birds astir, crowing at day-light, as well as frequently also during the day.

The Kyah breeds early in the spring, in some localities, at all events, from March to May, and at this time is very difficult to put up; indeed, I have seen an Elephant almost break down a bush before the Partridge would rise. The eggs are said to be laid under some thick bush, in a dry spot, and to be white like those of the Grey Partridge. It is a very quarrelsome bird, fighting much with his own species, and one writer states that "the scars of former fights disfigure the breasts of almost every bird you kill." It drives off the Black Partridge if it comes across it.

Shooting the Kyah is, in many parts of the country, only possible on Elephants, as the high grass and reed jungles it frequents are impenetrable to man or dog; and moreover Tigers are occasionally found in the heavy jungles they frequent. But where the patches of reeds and rose bushes are thinner, and of small extent, and with fields and moderately high grass at hand, the sportsman may manage to get a good many shots if aided by a few strong and determined beaters and a good spaniel. Early in the morning, too, by walking down the reedy bank of a jheel or river, bordered by fields, and having a beater or two, with a good dog, you will get several shots as the birds fly across you into their cover. "The scent of this bird" says a writer in the *Beng. Sport. Mag.* "is most gratefully warm to pointers. My dogs would stand to the dead birds as staunchly as to the living ones."

The flesh is excellent if kept, though somewhat more dry than an English Partridge. The same writer above quoted says: "Of all the game birds of India known to me, cold roast Chikore, in my opinion, bears away the palm for delicacy of flavour and texture in

the meat. During the months of November and December, it forms an unrivalled dish for the Epicure in gamey flavour, and an additional inducement to the sportsman to fag and find."

This Partridge has had the name of *Chickore* erroneously applied to it by sportsmen in Bengal, and various writers in the Indian Sporting Magazines have kept up the error. Thus it is well figured by George Trigger as the *Chickore*; and previously a group of them as the *Common Chickore*; and one sportsman, on reading a correct statement that the *Chickore* Partridge is only found in the Himalayas, immediately publishes an article, stating that the writer was perfectly mistaken as to the *Chickore* being found only in the hills; for, that he has shot many near Rajmahal, and elsewhere, he himself having been deceived by the name popularly applied to this Partridge. A bad figure of it is elsewhere given as the *Wood Partridge* of Bengal, also a misnomer. No native ever applies the name of '*Chickore*' to this bird, and it is to be hoped sportsmen will give up applying this name to it, both as being perfectly erroneous, and as misleading naturalists and others.

The Kyah is easily reconciled to confinement, even when taken old, and eats greedily of almost every thing, but having a special preference for white ants. "They are" says the same writer previously quoted, "the most restless creatures imaginable, always on the move and trying to get out at any cranny and bar of the cage. Those which I had, called regularly at day break, sometimes in the afternoon, and in the middle of the night, when there was bright moonlight, and I have heard the wild ones answer them in the night from the borders of the jungle."

Probably not far from this group should come the Malayan *Rhizothera*, founded on the *Perdix longirostris* of Temminck. In habits it is said to resemble the Francolins, not associating in coveys. Both sexes are spurred.

The true Partriges, *Perdix* of most authors, (*Starna* of Bonaparte) are not represented in India, but one species occurs on its northern confines, in Thibet, *Perdix Hodgsoniæ*, Gould, made the type of the genus *Sacfa* by Hodgson. It is figured by Gould in the Birds of Asia, pt. IX., pl. 2, and appears to be quite of the same

type as the true *Perdix* of Europe, being without any indication of a tarsal spur. It has been lately shot by several sportsmen, Captain Smythe, Lt. Forbes, and others, who have sent specimens to the Asiatic Society of Calcutta; but I am not aware of its having been killed on this side of the Himalayas, so shall not include it in the 'Birds of India.' I add a brief description. The upper plumage is olive brown, the lower parts buff; it has a good deal of chesnut red on the sides and back of the neck and wings; the head is red, with white specks, and there is a black line from the forehead round the ear-coverts and throat. A belt of black-edged feathers on the upper part of the belly represents the horse-shoe marks of the English Partridge. Length 13 inches; wing 6; tail $3\frac{1}{2}$.

Perdix cinerea, the English Partridge, has eighteen tail-feathers; it chiefly affects cultivated lands, and is found over all Europe and Western Asia as far north as Siberia. It always associates in coveys, which in winter occasionally collect into packs of several coveys.

The African Partridges are very numerous. They form several groups, two of them, *Pternestes* and *Clamator*, of great size, and sometimes called Pheasants by colonists at the Cape and elsewhere. Some of these extend into Arabia, and travellers there have also called them Pheasants and Jungle-fowl. Blyth indeed is inclined to consider them 'Pheasants with Partridge tails,' but this I cannot agree to. They are mostly devoid of spurs, but some, called Francolins by Dr. A. Smith, have large and even double spurs, *Chœtopus* and *Scleroptila* of modern ornithologists.

4*th*. Wood-partridges.

Gen. ARBORICOLA, Hodgson.

Syn. *Arborophila*, Hodgson.

Char.—Tarsus not spurred; toes long, with long claws; tail of twelve feathers, short, of rather soft texture.

The Hill-partridges or Green-partridges as they are sometimes called, occur throughout the Himalayas, but are found nowhere else in India proper. They extend into the hilly regions of Assam and the Burmese provinces, as far, at all events, as Tenasserim,

and south of this they are replaced by one or more nearly affined genera. They are of rather small size and plump form, and are the most forest-loving of the family; being only found in dense forests in mountainous districts, or in thick scrub; they live in coveys, and have a whistling call. The sexes differ slightly in plumage, in some of the species at all events.

There are two species within our limits.

824. Arboricola torqueola, Valenciennes.

Perdix, apud Valenciennes—Blyth, Cat. 1510—P. megapodia Temminck, Pl. col. 462, 463—P. olivacea, Gray—Hardwicke Ill. Ind. Zool. 1, pl. 57—*Ban titar*, and *Peura*, H. *Phokras* in some parts of the North-West Himalayas—*Kohempho*, Lepch.—*Kangkom*, Bhot.

The Black-throated Hill-partridge.

Descr.—Male, crown of head and ear-coverts ferruginous, passing down the sides and nape of the neck; lores and supercilia black, the latter bordered by a narrow white line; shoulders, back and rump olive with dusky lunules, deepening to black spots on the rump; wing-coverts mixed olive and chesnut, with a few large black spots; chin and throat black, the outer feathers white-margined; the neck and upper part of breast bright olive, with a circle or torque of white below the black throat; the lower breast and belly whitish; the flanks olive, broadly dashed with chesnut and with large white spots; tail olive, black-speckled, and a terminal dark bar.

Bill black; irides deep brown; legs red. Length 10½ to 11 inches; extent 18; wing 5½; tail 2½; tarsus 1⅝. Weight 8 oz.

The female has the head and neck olive with black speckles; the chin, throat, and sides of the neck light chesnut, with black marks; the neck and breast olive with a chesnut gorget; the rest as in the male.

This pretty Partridge is found throughout the Himalayas, from Simla to Darjeeling. In Sikim it is found from about 6,000 to 9,000 feet, and is often taken in winter by imitating its whistling call. The female is figured in the *Bengal Sporting Magazine* under the name of the *Phokras*.

"This handsome little Partridge," says Mountaineer, "inhabits the forests and jungles, and is never found in open spots or the cultivated fields. It is most numerous on the lower ranges, in the wooded ravines and hill sides from the summit to near the base, but does not occur at the foot of the hills or low down in the valleys. It is not so common in the interior, but met with to an elevation of about 9,000 feet. It is rather solitary in its habits, generally found in pairs, but occasionally, in autumn and winter, five or six will collect together, and keep about one spot. It is a quiet unsuspicious bird; when alarmed it utters a soft whistle, and generally creeps away through the underwood if not closely pressed, in preference to getting up. Its flight is rapid, oftener across the hill than downwards, and seldom very far, in general not more than 80 or 100 yards. Its food being much similar, it is met with in the same places as the Coklass Pheasant, and both are often found together. Indeed, in winter, in some of the forests of the interior, Argus, Moonall, Coklass, and Kalleege Pheasant, and the Hill partridge are sometimes all found within a compass of 50 or 60 yards. I have not seen the nest or eggs. It feeds on leaves, roots, maggots, seeds, and berries; in confinement it will eat grain; in a large cage or enclosure its motions are very lively, running about with great sprightliness from one part to another. It occasionally mounts into the trees, but not so often as a forest bird might be expected to do. In the forests of the interior, in spring, it is often heard calling at all hours of the day. The call is a single loud soft whistle, and may be easily imitated so as to entice the birds quite close. At other seasons it is never heard to call except when disturbed."

825. **Arboricola rufogularis,** Blyth.

J. A. S. XVIII. 819—Blyth, Cat. 1511—*Kohom-but-pho*, Lepch. —*Lakom*, Bhot.

The Rufous-throated Hill-partridge.

Descr.—Male, as in the last species, but the black undulations on the back are generally almost obsolete; it has the red head of the last, but the throat, front, and sides of the neck are deep ferruginous, with some small black specks on the throat, and a black

torque or collar separating the ferruginous sharply from the purer ashy of the breast; an ill defined whitish streak with black specks on each side of the throat, and similar but more rufescent supercilia.

Bill black; irides red brown; orbits dull lake red; legs red. Length 10½ to 11 inches; extent 19; wing 5½; tail 2; tarsus 1¾.

The female has the dusky bars and undulations well developed, and the throat is more ferruginous than the female of the last, but otherwise there is little difference.

The rufous-throated Hill-partridge was discriminated by Blyth from specimens sent from Darjeeling, and we are ignorant of its range west of Sikim. It probably, however, extends into several of the hill ranges of Assam and Sylhet, for I procured it on the Khasia Hills. Its habits, voice, &c., are very similar to those of the previous species, from which it is not generally distinguished, but the natives of Sikim discriminate them, and have different names for them. The present species is found at lower altitudes than the former one, occurring chiefly from 3,000 to 6,000 feet of elevation, or rather more. Neither of these Partridges are readily obtainable by the sportsman at Darjeeling, owing to the density of the forest. Now and then dogs will put up a covey at which a chance shot may be had; but in general they can be best procured by imitating their whistle, and thus decoying them within short range of the gunner.

Arboricola atrogularis, Blyth, is very closely allied to *A. torqueola*, but differs in the male not having a chesnut head. It appears to be *P. olivacea* of Buch. Hamilton, and is found in the Tipperah Hills and Chittagong. *A. intermedia*, Blyth, occurs in Arrakan; and *A. brunneo-pectus*, Tickell, is from Tenasserim. This species has the wings strongly marked with chesnut. One species, *A. sphenura* is stated to occur in China. To the same group belong *Perdix personata*, Horsfield, and *P. javanica*, Gmelin, both from Java. *Peloperdix*, Blyth, founded on *Perdix charltoni* of Penang, is a distinct though affined form; and it appears to me that *P. punctulata*, Gray, figured in Hardwicke's Ill. Ind. Zool., is either the same bird as *P. charltoni*, or some nearly related species, perhaps *P. chloropus*, Blyth. *Caloperdix*, Blyth, founded on the *Tetrao ocellatus*, Raffles, (*Perdix oculea*, Temminck) is a very beauti-

ful species, poorly figured in Hardwicke's Illustrations. This is not unfrequently double spurred, and, says Blyth, displays unmistakeable affinities for *Polyplectron* and *Galloperdix*. It extends up the Malayan Peninsula as high as Mergui. It appears to me that *Perdix thoracica*, Temminck, supposed to be from the Philippine Islands, is more allied to this group of Wood-partridges than to true *Perdix* with which Blyth would class it. It has a larger and firmer tail than *Arboricola*, and possesses spurs, which, however, are irregular in number.

As a very anomalous form of spurless Partridges might here be placed *Rollulus* (formerly *Cryptonyx*) *coronatus*, the crowned Partridge of Malacca, extending to Mergui, remarkable for wanting the claw of the hind toe; and *R. niger*, (the female of which is *R. ferrugineus* of Gray in Hardwicke's Illustration,) the type of *Melanoperdix*, which possesses a minute hind claw. Gray places these birds in a distinct sub-family (*Rollulinæ*, Bonap.,) in which I think he is right; indeed from their coloration, the fan-like crest, and the different colour of the sexes, they ought rather to be placed with the *Gallinæ* than with the Partridges. The crest is similar to that of the crowned pigeons, *Goura*, and the bare frontal plumes of *Rollulus* are only represented, elsewhere, in this family, by some of the American Partridges.

5th. Bush-quails.

The dwarf Partridges or Bush-quails, belong more strictly to this sub-family than to that of the true Quails, though placed among the latter by Bonaparte.

Gen. PERDICULA, Hodgson.

Bengal Sporting Review, 1837, 1 p. 344.

Char.—Bill short, thick, well curved; tarsus with a blunt tubercle; wings firm, much rounded, outer web of most of the primaries sinuated and moderately firm; tail short, of twelve feathers. Of very small size. Sexes differ in plumage.

This genus is peculiar to India proper, not being found to the east of the Bay of Bengal, nor, as far as we know, across the Indus. It is not very distantly removed from *Perdix*, and has also some more remote analogies with the American Partridges. The species are called Bush-quail by sportsmen, and are found either

in bushy ground or in thin forest jungle. Hodgson noted the firm and quasi-spinous character of the plumage of the neck and breast.

826. Perdicula Cambayensis, Latham.

Perdix, apud Latham—Coturnix pentah, Sykes, Cat. 156—Hardwicke, Ill. Ind. Zool. 2 pl. 45 f. 3—Zool. Trans. 2 pl. 3—C. argoondah, apud Gould, Birds of Asia, pt. XV., pl. 13*—Jerdon, Cat. 278—Blyth, Cat. 1517—P. rubicola, Hodgson—P. rubiginosa, Valenc.? *Girza*, H.—*Girza pitta*, Tel.

The Jungle Bush-quail.

Male, above rich dark reddish brown, mottled with dull rufous; a long yellowish or rufous white supercilium, narrowly edged with black, and an indistinct pale line from the gape; between this and the supercilium rufous brown; the shafts of the feathers of the back of the neck and the back white; many of the feathers of the back with black markings; and the scapulars and wing-coverts richly marked on their inner webs with pale-creamy white and black; primaries red-brown, with fulvous or tawny spots or bars; tail with a few black bars; beneath, the chin is rich chesnut, and the rest of the under surface white, tinged with rufescent on the lower abdomen, flanks, vent and lower tail-coverts, with numerous cross bars of black, small on the throat and sides of neck, increasing in size on the breast and abdomen, and disappearing towards the vent. Bill dusky, with reddish tinge; irides light brown; legs yellow-red. Length 6½ inches; wing 3¼; tail 1¾; tarsus 1$\frac{1}{10}$.

The female has the lower plumage rufous, with whitish shafts in some specimens, and the black markings of the upper plumage less distinct; the throat is generally darker rufous than the rest of the lower plumage. In some specimens the rufous tinge is more distinct above, and in others less so, and the brown has more of a greyish tinge. The absence of the rich rufous throat in many of Col. Sykes' specimens is probably a mark of immaturity.

This pretty little Bush-quail is extensively distributed throughout India, and is found at all levels from the sea-coast to nearly 5,000 feet of elevation. In the south of India it is chiefly found in the more wooded districts in Malabar, Mysore, on the eastern

* Except the account of its habits by Sykes and Burgess which relates to the next bird.

Ghâts, and on the various hill ranges, being rare in the low Carnatic and bare table-land. Colonel Sykes found it on the higher ranges of the western Ghâts at 4,000 feet, and it is found throughout Central India as far as the northern slopes of the Rajmahal, Monghyr and Mirzapore hills. It is not generally found on the north bank of the Ganges, but Hodgson gives it as found in the Sub-Himalayan zone ; and Adams says that it is found in the valleys of the lower ranges of the Himalayas. It does not occur in Lower Bengal, that I know of, nor in any of the countries east of the Ganges, but it is said to be common in the N. W. Provinces.

I have very little doubt of its being Valenciennes' bird, although Sykes is inclined to think it distinct, but the markings, as described, are quite those of the present species and not of the next. Adams quotes it as *Perd. Asiatica*, Latham, but I am inclined to apply that specific name to the red Bush-quail, which is stated by Latham to occur chiefly in the Mahratta country, whilst *cambaiensis* is from Guzerat, where, as far as we know, only the present species is found. Adams, however, states that he has only seen this bird in the upper Himalayas, and not on the plains of India.

In the South of India this Bush-quail frequents open forests ; thick patches of jungle, and especially grassy hill sides with a few scattered bushes: also fields near hills or jungle. Riding through some of the more open forests, especially in the upland districts; a bevy of this little bird is often seen crossing the road, or feeding on grain dropped by cattle. In the North-west Provinces, however, they appear to frequent gardens, bushes and hedge-rows in more open ground, near stations. Hodgson states them to be migratory in Nepal. A writer in the *Bengal Sporting Magazine*, vol. xi., says that " they are very abundant in the plains of upper India, indeed in some places, scarcely any other game is to be had. According to my observations they are not migratory, but pair and breed about the same time as the Rain-quial *(Coturnix coromandelicus)* in the rains. During this period, the plumage of the male is really handsome. I have seen the parent birds leading forth their young exactly as a Partridge would. A covey of them in my garden never fails me for breaking in my setters."

This bush-quail is found in coveys or bevies of from six ro eight to a dozen and more, and generally all rise at once with a loud whirring noise, uttering cries of alarm, and after a short flight drop down again into the jungle.

A tolerable figure is given in the volume of the *Bengal Sporting Review* for 1836, pl. 1, f. 6, under the name of the Bush-quail.

827. **Perdicula Asiatica**, LATHAM.

Perdix, apud LATHAM, also Lauwau Partridge, LATHAM, No. 41.—GOULD, Birds of Asia, pt. XV., pl. 12, (except the account of its distribution and habits)—Coturnix argoondah, SYKES, Cat. 155, and Trans. Zool. Soc. vol. 2, pl. 2.*—JERDON, Cat. 277—BLYTH, Cat. 1518—P. rubiginosa, VALENC?—*Lowa*, H.—*Lawunka*, Tel.—*Sin-kadeh*, Tam. *i. e.* the red quail.

The Rock Bush-Quail.

Descr.—Male, upper plumage brownish rufous, the feathers minutely freckled and lineolated with black and tawny; the feathers of the head and neck tipped with black, and some of the scapulars and wing-coverts with irregular black blotches; primaries dark brown with tawny bars on the outer webs; tail with the lateral feathers also barred; a narrow white line passes over the eye from the base of the bill, bordered by dusky, and another short line below this from the gape; the rest of the face, chin and throat bright rufous; the whole lower parts, including the sides of the neck, being white with numerous cross bars of black, and tinged with rufous on the flanks, lower belly and thigh coverts.

Bill dark slaty; irides brown; orbits pale; legs red. Length 6½ inches; wing 3⅛; tail 1½; tarsus barely 1.

The female differs in having the upper surface more uniform rufous brown, and the whole of the lower parts are pale rufous, albescent on the vent; supercilia barely perceptible. Some specimens of males are more uniformly rufous than in the above description, and want the black markings. Judging from the character of the female these birds should be young males.

* NOTE.—Blyth in his Cat. looks on this as *pentah*, the former as *argoondah*, Sykes, but I think that I have correctly applied those names here.

This species differs more from the preceding one than is apparent from the description alone. It is always more rufous than the last, and wants the rich markings on the scapulars. The females are very similar to each other, but those of the present species are more uniform in their coloration than those of the last.

The Rock Bush-quail is found over most of Southern India, avoiding the Malabar Coast and forest districts generally, as well as the more highly cultivated portions. It is abundant in parts of the Carnatic and Mysore, as well as in the more barren portion of the Deccan, but does not appear to occur in the North of India at all beyond the Nerbudda, although very suitable ground for it occurs both at Mhow and Saugor. It frequents rocky hills with low scrub jungle, and especially barren uncultivated plains, scantily covered with low bushes of *Zizyphus* or *Carissa* and other thorny shrubs, out of which the bevy rises, ten or a dozen or twenty together, with a startling suddenness and bustle, dispersing more or less among the neighbouring bushes. The flesh of this Bush-quail, as well as of the last, is perfectly white, and it makes a good pie; plain roasted they are not so good as the species of *Coturnix*, being dry and with little flavour.

The *Lowa* is much used for fighting among the Mussulmans of Southern India, as indeed, the *Geerza* is also, though not so common, nor so highly esteemed. Burgess found this Bush-quail breeding from December to March, but found only four pale buff eggs. It probably lays considerably more.

The next species differs from the previous ones by its more slender and red bill, and the male wants the tarsal tubercle; but it has the rounded wings and much the same habits as the Bush-quails with which I shall continue to associate it, though as a somewhat aberrant species. Gould has separated it under the generic name of *Microperdix*.

828. **Perdicula erythrorhyncha**, Sykes.

Coturnix, apud Sykes, Cat. 117—and Zool. Trans. vol. 2, pl. 1—Jerdon, Cat. 279—Blyth, Cat. 1525—Hardwicke, Ill. Ind. Zool. 2, pl. 44, f. 2—Gould, Birds of Asia, pt. XIV. pl. 16—*Kokni lowa*, H. of some Shikarees.

The Painted Bush-quail.

Descr.—Male, forehead, lores, and crown of head black; a white frontal band, continued as a supercilium over each eye; upper plumage rich olive brown, with black lunules; scapulars, wing-coverts and secondaries with large patches of black, the shaft pale yellow, and some faint cross lines of the same; primaries brown, the outer webs barred with dark rufous; tail brown with black spots, and barred with narrow pale yellow lines; beneath, the chin is pure white, bordered by black; the rest of the lower parts are rufous, passing into olive brown on the sides of the neck, and with a few spots of black on the breast, increasing in size on the sides of the neck and breast; feathers of the flanks with large spots of deep black tipped with white.

Bill and legs fine red; irides yellow brown. Length 6½ inches; wing 3; tail 1½; tarsus 1.

The female differs in having the chin, supercilium, forehead, and face rufous, in place of white, and the head is brown instead of being black.

This very handsome Bush-quail has only been found on the higher lands of Southern India, extending along the crest of the Ghâts, from the Wynaad to near Poonah, at all events. I have observed it on the Neilgherries, in the Wynaad, and in Coorg; Col. Sykes recorded it from the valley of Karleh, associating with *Francolinus pictus*, and Mr. W. Elliot obtained it on the intervening ranges of Dharwar. It is far from rare in Wynaad, and abundant on the Neilgherries, frequenting bushy ground and patches of ferns on hill sides, or in the valleys. It frequently enters gardens at Ootacamund, and may be watched from the windows, running actively about, picking up seeds and insects, and I have known many fall victims to the stealthy pounce of some domestic Cat. It lives in moderately large bevies, which rise all together, but with less whirr than the other Bush-quails, their plumage generally being softer and not so firm.

No other species are known.

Sub-fam. Coturnicinæ, Quails.

Wings pointed, rather long; bill moderate; tarsi not spurred; of small size. Sexes differ somewhat in coloration. Of univer-

sal distribution throughout the Old World, but culminating in Australia and Eastern Malayana.

The true Quails are not always kept distinct from the Partridges, but their longer and more pointed wings, great powers of flight, and migratory habits of some, together with their distribution, point them out as a separate group. They are the most widely distributed division of Rasores, being found throughout the whole old continent, as far as New Zealand. One genus is peculiar to Australia and neighbouring islands; and there are two others differing very slightly from each other which have a still wider distribution.

Gen. COTURNIX, Brisson.

Char.—Bill somewhat slender, straight, or slightly curved; tarsi without spurs; tail very short, rounded and soft, concealed by the upper tail-coverts; wings lengthened and pointed, the 1st and 2nd quills longest.

This genus is most numerous in species in the Southern regions of Asia; one species only, the common Quail, being found throughout the greater part of Asia, Europe and Africa.

829. **Coturnix communis,** BONATERRE.

BLYTH, Cat. 1521—C. dactylisonans, TEMMINCK—SYKES, Cat. 153—JERDON, Cat. 275—GOULD, Birds of Europe pl. 263—C. indicus, HODGSON—*Batter* or *barra batter*, *H.*—*Ghagas batter*, H. of Falconers—*Gogari yellichi*, Tel.—*Peria kadeh*, Tam.—*Lowa*, Mahr. (according to Sykes)—The European Quail.

THE LARGE GREY QUAIL.

Descr.—Male, head brown, with pale edging to the feathers, and a central pale line; eyebrows, cheeks, and lores whitish, with the ear-coverts partially brown; the upper plumage brown, each feather of the back, scapulars, rump and tail having on one side of the pale yellow shaft a fine black patch, and some pale cross striæ; wing-coverts greyish-brown, with narrow streaks and bars of pale yellowish, black bordered; primaries dark brown, with pale rufous spots and bars on the outer webs; beneath, the chin is dull white; the throat rufous brown, with a double blackish

or brown band or collar, separated by some yellowish white, and a few blackish spots on the breast and sides of neck; the rest of the lower plumage pale rufous, deepest on the lower neck and breast, and becoming earthy on the flanks and vent; the long feathers of the flanks pale chocolate color, with a broad central yellow stripe and some black blotches.

The female chiefly differs in wanting the rufous brown patches on the throat and breast, which is much spotted with brown; she is larger than the male.

Bill horny brown; irides yellow brown; legs pale fleshy. Length 7½ inches; extent 14¼; wing 4¼; tail nearly 2; tarsus 1. Weight 3½ to 4 oz.

The European Quail is found throughout India, in considerable numbers, during the cold weather, most migrating during the rains, and breeding elsewhere, but a few pairs remaining and breeding in various parts of the country, especially towards the West and North-west. The Grey Quail, as it is generally termed in India, generally rises singly or in pairs, but considerable numbers are found together; and, in some localities, and in certain seasons, it occurs in great profusion, and affords excellent sport to the gunner. It is found in long grass, corn-fields, stubble and fields of pulse, wandering about according as the crops ripen in different parts of the country. It is less numerous towards the south of India than further north; but in beating grass-lands for the small Florikin, many are flushed. Dogs stand very steadily to Quail, and in the cool weather excellent sport is to be had, fifty couple being not unfrequently bagged by one gun in a mornings' shooting in the North-western Provinces. In parts of Bengal, they also abound much, and I have heard of seventy-five brace being killed by two guns. I have received several authentic notices of this Quail breeding in India, among other parts of the country in Rajpootana and Bundelkund.

The female lays eight to twelve eggs, dull whitish, blotched and speckled with umber brown. Gunga, in the *Bengal Sporting Magazine*, says, that on one occasion, he found four whitish eggs, dotted and blotched with pale red. The same good observer states, with reference to the abundance or otherwise of Quail, that 'if the

country which lies between us and their breeding country be defective from bad seasons, they proceed on, and reach us in great numbers; on the contrary, if they find food nearer at hand, they stop.' Hodgson states that they reach the valley of Nepal, in greatest numbers, at the ripening of the autumn and spring crops, respectively. Quails are netted in great numbers in some parts of the country, and many are also caught in hair-nooses. The Nepalese have an ingenious way of catching Quail. They put a pair of imitation horns on their heads, and walk slowly about the stubble fields, twirling some blades of grass in their hands in a way to imitate the champing of grass by cattle, and as these birds are not alarmed by cattle, they succeed in driving any quail they see under a small net, which they then drop, and secure the bird.

Sykes, Yarrell and others have expended much learning and paper in endeavouring to show that this bird was the species that supplied food to the starving Israelites, referring to its migratory habits as a proof thereof. It will be seen on referring to page 501, that the large Pin-tailed Rock-pigeon is considered, with more probability, to have been the bird referred to by the Historian.

830. **Coturnix coromandelica**, Gmelin.

Tetrao apud Gmelin—Blyth, Cat. 1523—Gould, Birds of Asia, pt. VI., pl. 7—C. textilis, Temminck, Pl. col. 35—Jerdon, Cat. 276—Sykes, Cat. 154—*Batter* or *batteyr*, H.—*Chinna yellichi*, Tel.—*Kade*, Tam.—'*Rain-quail*' of some Sportsmen.

The Black-breasted Quail.

Descr.—Male, upper surface closely resembles that of the Grey-quail, but somewhat brighter, and the colours more pronounced, the yellow stripes being in greater number; chin and throat pure white; two narrow cross bands of black on the throat, the upper one joined by a longitudinal stripe on each side, from the base of the lower mandible; below these, the breast is black, breaking up into black blotches on the abdomen, extending along the flanks as far as the vent; lower belly white, tinged with rufous on the flanks and lower tail-coverts; primaries plain unbarred brown.

Bill dusky; irides brownish-red; legs fleshy-yellow. Length 6 to 6½ inches; extent 12; wing 3½; tail 1¼; tarsus ⅞. Weight 2¼ to 2½ oz.

The female wants the black breast and cross bars, and has the neck and breast spotted with dark brown.

Young males have less of the black on the breast which is broken up into spots and blotches. During the breeding season, the black breast is more marked, the bill also is darker, and the legs redder.

This Quail bears so close a resemblance to the large Grey-quail, that many Sportsmen consider it to be the same, in spite of the difference in size, in which they are confirmed by the opinion of some natives who assert that the Rain-quail is the male bird of the Grey-quail. Looking at the upper surface of each, they certainly present a very close similarity, but the lower plumage differs much in the males, less so in females. The two birds, however, may always be distinguished by a glance at the primaries, which are unspotted brown in the present bird, barred in the Grey-quail.

The Rain-quail, as it is called by many Sportsmen, is found throughout the whole of India, rare in thickly wooded or forest districts. In many parts of the country where the grass is short and much dried up in the hot months, it is not found, or at all events, it is rare till the rains have commenced, and the young grass is springing up, when numbers appear all over the country, entering gardens and grassy compounds, and their pleasant whistle *whit-whit,* stronger in its tone than the call of the Grey-quail, may be heard at all hours. On this account it has received its popular name of 'Rain-quail.' Several writers in the *Bengal Sporting Magazine,* including Hodgson, used to consider the Coromandel and Rain-quail to be distinct; but the well-known 'Gunga' shewed that they were the same bird, and that the supposed distinction probably arose from Sportsmen considering that *Rain-quail,* so called, were never met with, except during the rains, whereas they are found at all seasons, but attract attention less in the cold weather, and indeed are then often confounded with the Grey-Quail.

Although it thus moves about, according to the seasons, from one part of the country to another, it is not strictly a migratory bird, and will occasionally be found in suitable spots where there is grass or good cover, at all seasons. It is frequently found in pairs, now and then in bevies, which however, do not generally rise at once like the Bush-quail. Though not the special object of the sportsman's attention, several of this Quail are frequently shot, along with the large ones. Throughout considerable part of Bengal, this bird does not appear to occur, or at all events to be plentiful during the rains, and as it is the most moist and grassy part of the country, probably many of the birds that disperse over the country during the rains, find shelter and food there in the hot weather. Both this and the Grey-quail are very partial to the grains of Cheenee, a small Millet cultivated extensively in Bengal during the hot weather and rains.

This Quail lays, from six to eight eggs generally, of a creamy pink colour, with a few brownish spots, in a tuft of grass, in June and July.

The Rain-quail extends to Assam, Sylhet, and upper Burmah. I found it abundant at Thayet Myo, in May and June.

Several other true Quails are found in Australia, New Zealand, and some of the most Eastern Islands of Malayana, *viz.*, *C. Novæ Zealandiæ*, Q. and G.; *C. pectoralis*, Gould; and *C. Realteni*, S. Müller. *C. histrionica*, Hartl., is, perhaps, an *Excalfactoria*.

The genus *Synoicus*, Gould, comprises some large-sized Quails peculiar to Australia, and there termed Partridges.

Gen. EXCALFACTORIA, Bonaparte.

Char.—Very similar to *Coturnix*; wings less pointed and more rounded; 1st quill shorter than the 2nd; 3rd, 4th and 5th, graduating very slightly from the 2nd. Of small size, and rich plumage. Sexes differ much in plumage.

I should not have adopted this genus, had not Gould and other modern Ornithologists done so, for it differs but little from true *Coturnix*. It has a more limited geographic range, one species occurring in India, but none in Central or Western Asia, nor

in Africa. Several, however, are found in the Malayan islands and Australia.

831. **Excalfactoria chinensis**, LINNÆUS.

Tetrao apud LINNÆUS—GOULD, Birds of Australia, V., pl. 92—BLYTH, Cat. 1524—JERDON, Cat. 280—Tet. manillensis, GMELIN—Cot. Philippensis, BRISSON—C. excalfactoria, TEMMINCK—C. flavipes, BLYTH, (the female). 'Painted Quail' of some Sportsmen—Rain-quail in parts of Bengal.

THE BLUE-BREASTED QUAIL.

Descr.—Male, head and upper plumage olive-brown, with a central pale streak on the head; the feathers of the back pale-shafted, and with a black band usually on one side only of the shaft; primaries and their coverts uniform olive-brown, some of the greater secondary coverts edged with deep rufous, forming a narrow red wing band, the rest of the quills barred with black; forehead, lores, cheeks, ear-coverts, and breast, of a fine dark purple grey; chin and throat deep black, enclosing a white triangular moustachial patch from the base of the lower mandible; and below the black is a white collar commencing as a narrow line behind the ear-coverts, and curving down and increasing in width on the lower part of the throat; this is narrowly edged by black; the middle of the abdomen, vent and under tail-coverts, rich deep maronne, as are most of the tail feathers.

Bill black; irides deep brown; legs bright yellow. Length 5¼ inches; extent 9; wing 3; tail not 1; tarsus ⅞. Weight 1¾ oz.

The female differs in wanting the pronounced lower plumage of the male bird; the supercilium, forehead, and throat are rufous, enclosing a dull whitish chin; the breast is brown, with dark cross bars, as are the feathers of the flanks which are much lengthened; the lower parts are whitish, tinged with earthy-brown. Length 5; extent 8.

This beautiful little Quail recalls the coloring of some of the American Quails, *Ortyginæ*, the grey and maronne tints being similarly present in one or more of that group. The upper plumage, however, is that of typical *Coturnix*. It is found in many parts of India; but generally rare, except in Bengal

and adjacent provinces, and is still more common in Assam and Burmah, where it is very abundant. Thence it extends through the islands to Australia, and it is said to be common in China and the Philippines. I have killed it once only in the Carnatic; one specimen is recorded in my Catalogue from Belgaum in Western India. It occurs occasionally in Central India, and in the Upper Provinces as far as Bareilly, but it is rare in all these localities, and perhaps only stragglers find their way so far. In lower Bengal it is tolerably abundant in damp grassy meadows, the edges of Indigo fields, and in the grass on road sides; and in Purneah, in the month of July, it was the only Quail I observed. It breeds in this month, the eggs being pale olive-green. When the young are full grown, they disperse all over the country, and this dispersion is greatly assisted, and in many parts, perhaps, caused by the heavy inundations to which great part of the country in Bengal is annually subjected, generally in August or September; and in the cold season they are replaced by the Grey-quail, and the so called Rain-quail. A female or young bird, evidently of this species, is figured in the *Bengal Sporting Magazine*, 1836, pl. 1. f. 5, the writer considering it possibly a young of *C. coromandelica*, and Hodgson as young of *C. communis*.

Other species of this pretty genus are *E. novæ guineæ*, Gmel.; *E. Adamsoni*, Verreaux; and *E. minima*, Gould, from Celebes, 'the smallest game-bird in the world.'

The American Partridges form the sub-family *Ortyginæ* of some, *Odontophorinæ*, Gray and Gould, the latter Ornithologist having published a valuable monograph of the group. They comprise several distinct forms, some crested, others not so; they are birds of a size intermediate between a Quail and a Partridge, and are found both in North and South America. One genus, *Odontophorus*, is chiefly found in South America. It has the bill short, much arched, and with two small teeth on each side of the lower mandible near its point. *Ortyx* and its near affines, *Lophortyx*, *Strophiortyx*, *Dendrortyx*, are mostly from North America. They frequent fields, hedge-rows, and occasionally woods. The females are said to lay numerous eggs, from fifteen to twenty-four. Blyth remarks that *Lophortyx* appears to bear the same relationship to

Ortyx which *Caccabis* does to *Perdix*, *i. e.* in its mode of coloration; and the similarity of color of *Lophortyx* to *Excalfactoria* has been already alluded to.

The Guinea-fowls of Africa may either form a separate subfamily of the *Tetraonidæ*, or be considered a distinct family as they are by Bonaparte. They are birds of large size, with short tails of fourteen or sixteen feathers, grey spotted plumage, and with the skin of the head usually devoid of feathers, in other cases plumed, and the head is furnished in some with a bony casque, in others with a crest of feathers. The tarsus is not spurred. They are noisy and gregarious. Blyth considers them 'a most thorough Partridge genus'; I think them sufficiently distinct in appearance, habits, and their limited African distribution, to form a separate family. Bonaparte places the Guinea fowls near the Turkeys, in a separate group, (Cohort *Craces*), along with the *Cracidæ*, thus considering them removed both from the Pheasants (Cohort *Galli*), and the Partridges (Cohort *Perdices*). Several species are known, one of them *N. vulturina* having the feathers of the neck and breast hackled and lanceolate. Among the Guinea fowls should be placed *Agelastes meleagrides*.

Fam. TINAMIDÆ.

Bill moderate, slender, straight, or slightly curved at the tip; wings moderate or short; tail short, occasionally none, the upper tail-coverts lengthened and concealing the tail in many; tarsi unarmed; lateral toes short, hallux small and elevated, or wanting altogether; claws short and blunt.

The birds of this family, mostly peculiar to the new continent, and especially to South America, are represented in the old world and Australia by two or three genera, which have, by most systematists, been usually placed among the Quails, and were located by Cuvier next *Syrrhaptes*, from the absence of the hind toe in both. Blyth first, I believe, referred these birds to the present family.

The *Tinamidæ* differ remarkably from other *Gallinaceæ* in the structure of their sternum, the inner emargination being very deep, but the outer one wanting, or rather the outermost projection of bone bounding it disappears altogether, leaving the sternum

very narrow, and with one deep notch. The furcula is very long and compressed, and its bony edge reaches the front of the sternal crest which is moderately raised. The stomach is muscular, and the intestines rather short with moderately long cœca.

The Indian members of this family may be placed in a distinct sub-family.

Sub-fam. TURNICINÆ.

Of diminutive size. Found in the old Continent and Australia. Three toes in one genus; the hind toe present in another.*

Gen. TURNIX, Vieillot.

Syn. *Ortygis*, Ill.—*Hemipodius*, Reinwardt.

Char.—Bill slender, of moderate length, straight, much compressed, slightly curved at the tip; nostrils linear; wings of moderate length, with the first quill longest in some, or the first three gently graduated; tail feeble, short, concealed by the upper coverts, of ten or twelve narrow feathers; tarsus moderate or rather long; toes moderate or rather short, separated at the base; no hind toe.

This genus is placed by Bonaparte and by Gray, in a sub-family *Turnicinæ* of the *Perdicidæ*.

These diminutive game-birds may be said to have their head quarters in Australia, whence they spread into Malayana, India and Africa, one species being even found in Spain. Those whosenidification is known, lay several large eggs, dull brownish green with numerous dusky spots; Blyth says only four, like Plovers and Snipe.

Two types are discriminable, the one larger, with the plumage much mottled and barred with black beneath; the other smaller, with the plumage more or less pale or fulvous, with spots. To the latter, Gray restricts *Turnix*, applying *Ortygis* to the former, which Bonaparte distinguishes under the name of *Areoturnix*. I shall not adopt these divisions except as sections.

1st—With the bill stronger, and the plumage of the females black-barred on the throat and breast. *Ortygis* apud Gray, *Arecturnix*, Bonap. In this section the females are larger than

* Mr. Parker's interesting paper on the anatomy of these birds reached me too late to incorporate here, but I will notice it in the Appendix.

the males, and the brightest coloured, as well as the boldest. They live chiefly in bushy jungles with grass.

832. **Turnix taigoor**, SYKES.

Hemipodius, apud SYKES, Cat. 164 (the male) and H. pugnax, Cat. 163 (the female)—Trans. Zool. Soc. 2, pl. (the male)—Beng. Sport. Mag. 1836, pl. 1. f. 8.—JERDON, Cat. 268 and 269—T. ocellatus, apud BLYTH, Cat. 1526, (rufous variety from S. India, and small variety from Bengal)—T. rufa, BONAP. ex. BLYTH—T. bengalensis, BLYTH—*Gulu* and *Gundlu*, H. in the South—*Salui gundru*, H. in the N. W. P.—*Puredi*, Tel. *i. e.* the bold one, (the female) *Koladu*, Tel, *i. e.* of no spirit, (the male)—*Kurung kadeh*, Tam. (the female), *An-kadeh* (the male)—Black quail of some Sportsmen.

THE BLACK-BREASTED BUSTARD-QUAIL.

Descr.—The female is rufous above, with transverse black lines on each feather of the back, scapulars and rump, these having also yellowish white lateral margins, internally edged with black; the crown of the head rufous with a series of black and white feathers, appearing as white spots set off with black, along the medial line; another and broader series over each eye; a third bordering the throat, which, with the middle of the foreneck to the commencement of the breast, (together with the more conspicuous feathers of the wings) is fulvous white, with tolerably broad black cross-bars; below the breast, light but bright ferruginous.

Bill dark slaty; irides pale yellow; legs plumbeous. Length about 6½ inches; wing 3½; tarsus $\frac{9}{10}$; bill at front ½. Weight 2½ oz. or a trifle more.

The male bird differs in wanting the black on the throat and neck, the chin and throat being whitish; the markings on the head are whitish yellow without black specks; the throat and breast are faintly banded; and the whole tone of plumage is lighter and less pronounced than in the female. Length not quite 6 inches. Weight 1¾ to 2 oz.

It will be seen from the name I have adopted and the synonyms, that I do not consider this bird to be the same as the Burmese,

and (perhaps) Malayan race which also occurs within our limits, in the Himalayas, and hence I have taken Sykes' name as the one first bestowed on the peninsular race, albeit applied only to the male, as he considered the female to be *pugnax*, a Javanese bird. As thus understood, the present species may be said to inhabit the whole of Continental India including Ceylon. Specimens from different localities differ slightly. The Ceylon bird is altogether similar in the upper plumage to peninsular specimens, but rather deeper ferruginous beneath; whilst some from Bengal have a slightly darker and browner tone above, but with the whitish edgings to the feathers of the back still more pronounced and wider; whilst the ferruginous colour of the lower parts is perhaps a little paler.

The black-breasted Bustard-quail affects grassy patches in the forests and jungles; also low bushy jungle, and is frequently to be found in fields of Chili, Dhal, and various dense crops, especially if near patches of jungle; for in open and barren country, or very highly cultivated country without jungle, it is comparatively rare. Occasionally small bevies of five or six are flushed together, but in general, it is put up singly, or two or three birds together. It feeds on grain of various kinds, but also very much on small insects, larvæ of grasshoppers and the like. The female has a peculiar loud purring call which must be familiar to many.

The hen-birds are most pugnacious, especially about the breeding season, and this propensity is made use of, in the south of India, to effect their capture. For this purpose a small cage with a decoy bird is used, having a concealed spring compartment, made to fall by the snapping of a thread placed between the bars of the cage. It is set on the ground in some thick cover carefully protected. The decoy-bird begins her loud purring call which can be heard a long way off, and any females within ear-shot run rapidly to the spot, and commence fighting with the caged bird, striking at the bars. This soon breaks the thread, the spring-cover falls, ringing a small bell at the same time by which the owner, who remains concealed near at hand, is warned of a capture; and he runs up, secures his prey and sets the cage again in another locality. In this way I have known twelve

to twenty birds occasionally captured in one day, in a patch of thick bushy jungle in the Carnatic, where alone I have known this practice carried on. The birds that are caught in this way are all females, and in most cases are birds laying eggs at the time, for I have frequently known instances of some eight or ten of those captured, so far advanced in the process as to lay their eggs in the bag in which they are carried, before the bird-catcher had reached my house. The eggs are said to be usually deposited under a bush in a slight well-concealed hollow; they are from five to eight in number, and of a dull stone grey or green colour, thickly spotted and freckled with dusky, very large for the bird, and very blunt. In the Carnatic this bird breeds from July to September; further south from June to August, and in Ceylon, says Layard, from February to August. The females are said by the natives to desert their eggs, and to associate together in flocks, and the males are said to be employed in hatching the eggs, but I can neither confirm nor reject this from my own observations.

This bird I presume from the description to be the Rain-quail of a writer in the *Beng. Sport. Mag.* for September 1835, who says that "the scent is good and dogs find them well in the evening."

The flesh of this bird is excellent, mixed brown and white, succulent and tasty. Col. Sykes asserts that their fighting qualities are unknown in the Deccan, as also in Java; but they are well known in the south of India; and at Hydrabad in the Deccan, Arcot, and other places, many used to be kept for that purpose by Mussulmans.

833. **Turnix ocellatus,** Scopoli.

Oriolus apud Scopoli—Blyth, Cat. 1526, (in part)—H. atrogularis, Eyton, (the female)—H. taigoor apud Eyton, (the male)—H. plumbipes, Hodgson—H. pugnax apud Gray—*Timokpho*, Lepch.—*Timok*, Bhot.

The Hill Bustard-quail.

Descr.—Female, very similar in appearance to the last, but darker, less rufous and browner above, the feathers minutely mottled, and with the pale edgings to the feathers of the back and scapulars, &c., almost wanting, giving quite a different appear-

ance to the plumage; the head too is generally blacker; the black spots on the wings are rounded, and have less of the character of bars and more that of spots. In size it is larger too than the peninsular species.

Bill slaty brown; irides pale yellow; legs leaden. Length fully 7 inches; wing $3\frac{6}{10}$; tail 1; tarsus 1; bill at front $\frac{9}{10}$ths, stronger than in *taigoor*.

The male bird differs from the female much as that of *taigoor* does, and it has the same characters of the upper plumage as the female.

This species appears to inhabit the Himalayas, Assam and Burmah, perhaps extending into Malayana. Specimens from the Khasia hills and Burmah, quite agree with Himalayan birds, but those from Malacca are still darker, the whole head being blacker, the pale lines on the top of the head and the supercilia hardly contrasting; and the black wing-spots are still rounder than in Himalayan birds, Scopoli's name of *ocellatus* being perfectly applicable to such birds, a trifle less so to Himalayan specimens, and not at all to *taigoor*. It is possible that in Malacca an allied race, *pugnax*, takes the place of the Himalayan and Burmese birds, and perhaps interbreeds with it, as very probably the present bird may with *taigoor*, where the two meet, on the confines of Bengal to the North and East. How far this bird may extend along the Himalayan range westward, I know not, as there are no records of its occurrence further West than Nepal.

The Hill Bustard-quail is found on grassy slopes on the Himalayas, in cleared spots as Tea gardens, and fields; and the female has a similar, but still louder purring call than that of *taigoor*. The female is much more commonly met with than the male. It occurs up to a level of 7000 feet, and I have seen it occasionally in grassy compounds in the station of Darjeeling. I had the egg brought me once, very similar to that of *taigoor*, but darker and a trifle larger.

Other species belonging to this section are *T. pugnax*, Temminck, from Java, possibly the same as *T. luzoniensis*, Gmel.; *T. fasciatus*, Temm., from Macassar, figured by Gould, Birds of Asia, pt. XIII., pl. 16; and *T. nigrifrons*, Cuvier, from some of the islands. Two

African species, *T. nigricollis*, Gmel., and *T. hottentotus*, Temm., probably belong to this group.

2.—With more slender bills, the plumage beneath more or less rufous with a few spots, not black-barred, restricted *Turnix* of Bonaparte and Reichenbach. Sexes alike or nearly so.

834. Turnix Dussumierii, Temminck.

Hemipodius apud Temminck, Pl. col. 454, f. 2—Blyth, Cat. 1530—T. tancki, Buch. Hamilton apud Blyth, J. A. S. XII. 181, bis—T. joudera, Hodgson—figured, Beng. Sport Mag. 1838 pl. 1 f. 1.—*Pedda daba gundlu*, Tel.

The Larger Button Quail.

Descr.—Crown light brown, with blackish margins to the feathers; a central stripe on the crown; the supercilia and ear-coverts light fulvescent; nape bright ferruginous; back ashy brown, tending to rufous, the feathers with dark cross bars, most marked on the lower back and rump; scapulars and some of the nearest dorsal plumes with edgings of creamy yellow; wing-coverts light sandy brown, with a small black spot near the tip which is margined with pale yellowish; quills earthy brown, the primaries narrowly edged with yellowish white; chin and upper part of throat white; the rest of the lower parts ferruginous, deepest on the breast and upper part of the abdomen.

Bill yellow; irides yellowish white; legs deep yellow. Length 5½ to 6 inches; wing 2¾; tarsus 1; bill at front $\frac{7}{16}$.

This large Button-quail (as this species and the next are named by sportsmen in India) is found in open grassy glades in forests or jungles, both on the plains, and more especially in hilly countries, and is also found in grass jungles throughout Bengal and the countries to the eastward. It occurs throughout India in suitable localities, rare in the bare Deccan and North-western Provinces, not uncommon in open glades of the upland districts of Malabar, in the Eastern Ghats and in lower Bengal. It is always seen singly, in patches of long grass or thick cultivation, flying but a short distance, and is very difficult to flush a second time.

835. **Turnix Sykesii**, A. Smith.

Blyth, Cat. 1531—T. Dussumierii, Temm. apud Sykes, Cat. 165—and Gray, List of Nepal birds,—and Jerdon, Cat. 769—T. variabilis, Hodgson, Beng. Sport. Mag. 1837 p. 345?—figured in the same periodical for 1836 pl. 1. f. 7—and for 1838 pl. 1. f. 2—*Dabki*, H. of some—*Tura* of others—*Chimnaj*, H. at Muttra—*Libbia*, H. in Purneah—*Tatu battera*, Sindh—*Chinna* (or *tella*) *daba gundlu*, Tel.

The Button-quail.

Descr.—Head brown, black-barred, with a pale supercilium and central stripe; upper parts chesnut brown, each feather finely barred with black, and edged with yellowish-white, conspicuously on the scapulars and part of the back, and, on the wing-coverts so broadly as to appear entirely yellowish white with chesnut, black-edged spots; quills dusky brown; rump and upper tail-coverts dark brown, closely barred with black, and with faint whitish edges to the feathers; throat whitish, with a few blackish specks on the sides; breast pale ferruginous, with the sides of the neck and breast with dark brown drops and lunules; abdomen whitish. Bill plumbeous; irides pale yellow; legs fleshy whitish. Length 5 to 5¼ inches; wing 2¾; tarsus ¾.

This Button-quail, the most diminutive game-bird of India, was first named by Dr. A. Smith, in his Zoology of South Africa, when describing a nearly allied African species *T. lepurana*. It occurs throughout the whole of India, (not however affecting hilly or forest districts,) in grass, corn fields, and wherever there is thick herbage. It is flushed with great difficulty, often getting up at your very feet, flies but a few yards, and drops down again into the grass, not to be re-flushed but after a most laborious search, and sometimes allowing itself to be caught by the hand, or by a dog. Its name of *Dabki*, signifying 'squatter,' is given from this habit. It has a low plaintive moan of a single note. I regret that I know nothing of the habits of this or the previous species as to breeding, &c.

Other species of this group are *T. andalusicus*, Gmelin, figured by Gould, Birds of Europe, pl. 264, found in Africa and the south

of Europe, which has occasionally been killed in England, and there are other African species. *T. maculosus*, Temm., (*Blanfordi* Blyth) represents *Dussumierii* in Burmah. Several species from Australia, are figured by Gould in his Birds of Australia, and some of these appear to be similar to the birds of the first section; whilst others resemble *Dussumierii;* and one or two have the coloration of the African species mentioned below.

The genus *Pedionomus* of Gould, differs in possessing a hind toe, and is placed by Bonaparte among his *Coturnicinæ*, but it clearly belongs to the present family. It is the *Turnici-gralla* of O. des Murs. Only one species is known *P. torquatus*, of which *P. microurus*, Gould, is considered to be the male. *Oxytelos*, Vieillot, (*Helorlyx*, Agass.) has been dedicated to some African species, the best known of which is *O. meiffreni*, V., (*nivosus*, Swainson).

The *Tinamidæ* of South America live in fields, or the edges of woods; and are said to run well but to fly badly; they lay seven or eight eggs; and are seldom found in flocks. They vary from 6 inches to nearly 15 in length. One genus *Tinamotis* makes a somewhat near approach to the Bustards.

Ord. GRALLATORES.

Grallæ, L.—Waders—Shore-birds.

Lower part of the tibia bare; tarsus more or less elongated; feet of most, with the hind toe imperfect and raised, or absent; in a few long, and on the same plane as the front toes; bill very varied; tail usually short; wings lengthened.

The nudity of the tibia to a greater or less extent, and the usually long legs, are the only general features characteristic of this order, which comprises a considerable number of Ground-birds of very varied appearance, habits, and structure. Many have long necks, proportional, in most cases, to the length of the legs. The bill varies from the gigantic beak of the Adjutant and *Mycteria*, to the short and slender bills of the Plovers and *Tringæ*. The outer toe is usually joined to the middle one by a short web, and the inner toe occasionally; whilst in some the toes are perfectly separated. In a few the toes are bordered by a loose web. All, except those of the first family, (which cannot fly at all) and some of the Rails, fly well, and stretch their legs out behind them during flight. They frequent chiefly the edges of rivers, seas and lakes; many affect swamps, and a few dry plains or even sandy deserts. They feed mostly on fish, reptiles, molluscs, insects, &c., and a few on vegetable matter. In a large number, there is a vernal moult, and the plumage changes considerably, in many becoming more or less black, in others rufous. They comprise several very distinct groups, with anatomical differences, and of varied habits, which will be best noticed under each tribe.

They divide into two great groups, the one in which the young, as in the *Rasores*, run at once when hatched; the other in which the young are helpless at birth, and remain in the nest till near maturity, the whole forming five tribes.

A.—The young, when hatched, able to run at once.

1*st*, Tribe.—*Struthiones*, comprising the Ostriches, Emeus, &c.

2*nd*, *Pressirostres*, containing the Bustards, Plovers, and Cranes.

3*rd*, *Longirostres*.—Snipes and Sandpipers.

4th, Latitores.—Rails and Water-hens.

B.—With the young helpless at birth.

5th, Cultirostres.—Storks, Herons and Ibises.

Tribe—STRUTHIONES, Latham.

Brevipennes, Cuvier,—*Cursores*, Ill.

Of large size. Some with three toes, others with only two; wings undeveloped.

This tribe contains the Ostrich, Emeu, Cassowary, and *Apteryx*. They are the giants of the Bird kingdom, and by their massive form and size, as well as in certain points of structure, they approach the nearest to Mammalia, and, at the same time, may, in some respects (with Parker) be called 'unspecialized forms,' but hardly 'low and embryonic.' They are divided into two families, *Struthionidæ* and *Apterygidæ*.

The well known Ostrich of Africa, *Struthio camelus*, L., is the type of the former. It has the wings rudimentary, consisting of a number of large decomposed feathers, so well known as ornaments. The tail-feathers resemble those of the wings, the head and neck are almost bare, and the plumage lax, with the supplementary plume well developed. The bill resembles that of Bustards, and there are only two toes, the inner front toe being absent. The sternum is short, broad, and without a keel, the bones of the pubis unite as in Mammals, and the bones are quite destitute of air cells. The legs are very strong and muscular. They resemble Gallinaceous birds closely in their enormous crop, strong gizzard, long intestinal canal, and long cœca; and they feed on various vegetable substances, often swallowing stones and pieces of metal. They have moreover, a large sort of urinary bladder or pouch, and are the only birds that urinate. The penis of the male bird is long and often protruded. The Ostrich is polygamous, and the attendant females of one male deposit their eggs often to the number of twenty or thirty together, in the sand, where they are hatched chiefly by the heat of the sun, assisted by the male. The young, of course, run as soon as hatched. The Ostrich passes over from Africa into Arabia, and I have heard it stated that it is believed, many years ago, to have extended along the shores of the Sea, as far as Sindh.

A second species is supposed to exist, *S. epoasticus*, Bonap., from the very different egg brought occasionally. *Vide* J. A. S. XXVIII. 282.

The American Ostriches, of which two species are known, *Rhea americana*, and *R. Darwinii*, differ from the African birds in having three toes, the nails of which are nearly equal; and the head and neck are clad with feathers. The males perform the duties of incubation.

The Emeus of New Holland have also three toes. The body plumage resembles hairs, lying down on each side of the body from a central line or parting. The wings are still more rudimentary than in the Ostriches. The accessory plume of the feathers is nearly as large as the feather, so that two stems appear to arise from the same quill. They have neither casque on the head, nor naked orbits, nor caruncles. Two species are known, *Dromains novæ Hollandiæ*, and *D. ater*. The eggs are fine dark blue green.

The Cassowaries inhabit various islands in the Eastern Archipelago, and four species are now recorded. The wings consist of a few cylindrical, hard shafts, without any barbs; the claw on the inner toe is much larger than the others, and curved (as in *Grus* and other birds); the head and neck are naked, and are furnished with wattles of a bright color, generally blue and red. The body plumage is still more hair-like than that of the Emeus; the supplementary plume is very large, and there is a rudiment even of a third. The intestinal canal is short, the cœca small, and there is no proventriculus. It has been remarked that Emeus and Cassowaries resemble Bustards in their anatomy, whilst Ostriches and *Rhea* are more like Gallinaceous birds. Owen in his lectures states that Cassowaries are modified Coots, and Parker in his paper already alluded to, says that he feels certain that there is a near relationship between the Rail-tribe and the Ostriches; but that it is more philosophical to say that a Coot is a modified Cassowary. The best known species is *Casuarius galeatus* of New Guinea. The other species are *C. Bennettii*, Gould, the *Mooruk*; *C. uni-appendiculatus*, Blyth; and *C. australis*, Gould. The eggs of the Cassowaries are pale greenish.

The other family, *Apterygidæ*, is composed of one genus only, *Apteryx*, a remarkable wingless bird from New Zealand, with a long Snipe-like bill, and the nostrils situated at the tip; short legs, and a short hind toe with a strong claw. The wings are so perfectly rudimentary that no trace of them is visible externally. The diaphragm is perfect, the stomach slightly muscular, the intestines moderately long, and there are moderately sized cœca. The feathers want the supplementary plumes. The birds are chiefly nocturnal, running rapidly, and they feed on insects. Three species are known, *A. australis*, *A. Mantelli*, and *A. Oweni*.

Fragments of some enormous birds have been discovered in New Zealand; and one of these, the *Moa*, is supposed only recently to have become extinct. The egg of one was infinitely larger than that of the Ostrich. Fossil remains of a gigantic Ostrich are found in the Sewalik range of hills.

Tribe—PRESSIROSTRES, Cuvier.

Cursores, apud Bonaparte (in part.)

Tarsi elongated; hind toe small or absent; bill moderate or short, thick, moderately depressed at the base, compressed on the sides.

This tribe, as I recognise it, comprises Bustards, Plovers, and Cranes; in all the young run from the egg. The majority feed chiefly on insects, a few on grain and vegetable diet. They may be distinguished from the next tribe, the *Longirostres*, by their usually shorter and thicker bill, more robust make, average greater size; and in their habits they frequent the open dry plains more habitually than banks of rivers, shores or marshes. A few are migratory, others breed and remain here throughout the year. Several have a double moult, and the change of plumage which takes place, sometimes in the male only, in others in both sexes, is usually to black, in a few cases only to rufous. They lay but few eggs, usually four, sometimes two only, usually dark olive brown, blotched or plain. The Cranes are usually classified next the Herons, by some, indeed, in the same family, but their very different habits, the young running as soon as hatched, and the similarity of their bills, and general form to that of Bustards, all combine to remove them far from the Herons and bring them close to Bustards.

The *Pressirostres* may be distributed among the following families, all of which, except the last, are represented in India:—

1. *Otididæ*, Bustards and Floricans.
2. *Cursoridæ*, Courser-plovers.
3. *Glareolidæ*, Swallow-plovers.
4. *Charadridæ*, Plovers.
5. *Hæmatopodidæ*, Shore-plovers.
6. *Thinocoridæ*, Game-plovers, a purely American group.
7. *Gruidæ*, Cranes.

Gray, in his List of Genera, places *Thinocoridæ* among the *Rasores*, and considers the Swallow-plovers and Shore-plovers simply as sub-families of the *Charadridæ*.

Fam. OTIDIDÆ.

Bill rather short, stout, broad at the base, somewhat compressed towards the tip; upper mandible convex and slightly curved; nostrils in a large membranous groove; legs long, rather stout; tarsi reticulated; three short toes united at the base by a small membrane; hind toe always absent; claws short and blunt; wings ample, more or less pointed; plumage mottled and game-like.

Bustards have the heavy aspect and form of Gallinaceous birds, which they also approximate somewhat in the form of their bill, and the short membrane at the base of their toes; but their more nude tibia, and their general anatomy ally them closely with the Plovers. They differ, however, from these last by their less muscular stomach, and partially polygamous habits; and they approach the Cranes and Cassowaries, and perhaps are distantly related to some of the *Thinocoridæ*, and also to the *Tinamidæ*. Their plumage is beautifully mottled, light olive brown or fulvous and black, and at the spring moult many of them assume various ornamental tufts and plumes, and more or less of a black colour, like several Plovers. Their food is chiefly insects, occasionally in dearth of this aliment, shoots of plants, grain, and vegetable matter. They lay two to five eggs, (or more it is said,) of a dark olive brown colour; and, though not strictly migratory, they wander about a

good deal in search of food and shelter. Their wings are strong and very ample, and, contrary to received notions, they use them very freely, and are capable of a tolerably strong and protracted flight. They are found throughout the Old World, extending to Australia.

The sternum has one deep fissure in some, two however in others; the stomach is capacious, with rather thin coats; the intestines are short; and the rectum large, making the nearest approach to the Ostriches. In some there is a gular membranous pouch (communicating with the mouth by a small aperture beneath the tongue), supposed by some to supply water to the female, but, as it only exists in the male bird, and as the Bustards do not appear to drink, it is more probably a sexual appendage, perhaps merely used in dilating the throat. Bustards can raise the feathers round the ears to catch any distant sound.

They vary a good deal in the length and curvature of their beaks, and in the length of the tarsus, as well as in the character of the plumage, and the changes they undergo; and they have been divided into several genera. India possesses representatives of three groups.

Gen. EUPODOTIS, Lesson.

Char.—Bill long, pointed, nearly straight; legs long and strong; wings lengthened and very ample; male provided with a pouch; sexes alike in plumage or nearly so, but the female about a third smaller; no spring moult. Of very large size.

This genus contains some of the largest species in the family, and is found in India, China, Africa and Australia. They frequent bare open plains, as well as high grass and corn fields, and live entirely, or nearly so, on insect food, chiefly large grasshoppers.

836. **Eupodotis Edwardsii,** GRAY.

Otis apud GRAY—HARDWICKE, Ill. Ind. Zool. 1, pl. 59—BLYTH, Cat. 1539—O. nigriceps, VIGORS—GOULD, Cent. Him. Birds, pl. 72—SYKES, Cat. 166—JERDON, Cat. 281—O. lucionensis, VIEILLOT? *Tokdar*, H.—*Sohun*, and *Gugunbher* in the North-western Provinces—*Gurayin* in Hurriana—*Burra chirath* in some parts—*Batt-meka*, or *Bat-myaka*, Tel.

The Indian Bustard.

Descr.—Male, top of head with crest black; face, nape, and the whole neck, white, the feathers somewhat lengthened and hackled in front; the back and upper plumage, including the shoulder of the wings and the inner wing-coverts, pale olive brown, or buff, beautifully mottled and variegated with minute lines of black; outer wing-coverts black, white tipped; greater coverts slaty-grey, also tipped with white, as is the winglet; primaries dark slaty, more dusky on their outer edges, and white-tipped; tail as the back, with a dark sub-terminal band not always very distinct on the central feathers; a blackish brown band across the breast; lower parts, with the thigh-coverts, white; the flanks dark olive brown; vent and lower tail-coverts the same but lighter.

Bill dusky above, yellowish beneath; irides pale yellow with some brownish specks; legs and feet dingy pale yellow. Length, 4½ to 5 feet; extent 8 feet; wing 30 inches; tail 13; bill at front 2; tarsus 8½. Weight 26 to 28 lbs.

The female is one-third less at least, the white of the neck is less pure, generally, indeed, mottled with olive-brown, and with some rufous about the face and eyes; the pectoral band is incomplete, and consists of broken spots; the abdomen is less pure white and the flanks paler brown and more spotted. Length 3½ feet. Young males resemble the females, and it is only the largest old males that have the neck pure white, as described above; in most there being a few brown specks on the neck. In the old male, too, the neck appears very thick, the feathers being well puffed out and full. A fully grown adult male stands very high, above 4 feet. The gular sac is stated to be able to hold about three quarts of water.

This noble bird is found throughout considerable part of India, most common in the West, and not known in Bengal or Behar, nor in the Malabar Coast. It is found occasionally in the Carnatic and Mysore, tolerably common in the Deccan and in the Southern Mahratta country, extending through Central India as far East at all events as Saugor and Rewah, and abundant in Rajpootana. I have not heard of its occurring anywhere in the valley of the Ganges.

The Bustard frequents bare open plains, grassy plains interspersed with low bushes, and occasionally high grass rumnahs. In the rainy season large numbers may be seen together stalking over the undulating plains of the Deccan or Central India. I have seen flocks of twenty-five and more, and a writer in the *Sporting Review* mentions having seen above thirty on one small hill. This writer states his belief that they are never seen in any district that is not characterized by hills as well as plains; but this, from my own experience I would merely interpret that they do not frequent alluvial plains, but prefer the undulating country; for I have seen them on extensive plains, where there were merely a few ridges or eminences, and nothing deserving the name of a hill close at hand. Towards the close of the rains, and in the cold weather before the long grass is cut down, the Bustard will often be found, at all events in the heat of the day, concealed in the grass, but not for the purpose of eating the seeds of the Roussa grass, as the writer above alluded to imagines, rather for the large grasshoppers that abound so there, and which fly against you at every few steps you take. During the cold weather the Bustard frequently feeds, and rests during the day likewise, in wheat fields. When the grass and corn is all cut, and the bare plains no longer afford food to the Bustard, it will be found along the banks of rivers where there is long grass mixed with bushes, or the edges of large tanks, or low jungle where there is moderately high grass, or it wanders to some district where there is more grass, for though they do not migrate, yet Bustards change their ground much according to the season, and the supply of grasshoppers and other insects. The hen birds, remarks the writer quoted above, generally congregate together during the rains, are very timid, and frequently, when a sportsman is pursuing a single one, she will attempt to seek safety, fatally for herself, in some large bush, particularly if the gunner turn aside his head, and affect not to see her at the moment of hiding. The cock-birds, at this season, feed a mile or so apart from the hens, and stretching their magnificent white necks, stride along most pompously. Besides grasshoppers, which may be said to be their favorite food, the Bustard will eat any other large insect, more especially *Mylabris*, or blistering beetle, so

abundant during the rains; the large *Buprestis*, *Scarabæi*, caterpillars, &c., also lizards, centipèdes, small snakes, &c. Mr. Elliot found a Quail's egg entire in the stomach of one, and they will often swallow pebbles or any glittering object that attracts them. I took several portions of a brass ornament, the size of a No. 16 bullet, out of the stomach of one Bustard. In default of insect food, it will eat fruit of various kinds, especially the fruit of the *Byr* (*Zizyphus jujuba*) and *Caronda* (*Carissa carandas*); grain, and other seeds and vegetable shoots.

The Bustard is polygamous, and at the breeding season, which varies very greatly according to the district, from October to March, the male struts about on some eminence, puffing out the feathers of his neck and throat, expanding his tail, and ruffling his wings, uttering now and then a low deep moaning call heard a great way off. The female lays one or two eggs of a dark olive green, faintly blotched with dusky. I have killed the young, half-grown, in March, near Saugor.

The Bustard has another call heard not unfrequently, compared by some to a bark or a bellow; chiefly heard, however, when the bird is alarmed. This is compared by the natives to the word *hook*, hence the name of *hookna*, by which it is known to the villagers about Gwalior. When raised, it generally takes a long flight, sometimes three or four miles, with a steady, continued flapping of its wings, at no great height above the ground, and I never found that it had any difficulty in rising, not even requiring to run one step, as I have many times had occasion to observe when flushing them in long grass or wheat fields. On the open bare plains, it will sometimes run a step or two before mounting into the air. A writer in the *Bengal Sporting Magazine* asserts that he has known the Bustard ridden down, and that after two or three flights it is so exhausted as to allow of its capture. I imagine that a healthy bird would tire out the best horse and rider before giving in.

At times a single Cock-bustard can be very easily stalked so as to get within distance of a fair shot, 50 or 60 yards, or even nearer, by rapidly moving obliquely towards them, as mentioned previously when speaking of Sand-grouse; when several are together they

are more wary, but even then can often be approached within one hundred yards. If there is any bushy or uneven ground to favor the gunner, the task is comparatively easy. Occasionally they may be flushed in long grass, or Dhal fields, or even Wheat fields, and an easy shot obtained; and I once brought down two birds, right and left, in a wheat-field near Saugor.

Many sportsmen kill it with the rifle, and one sportsman on the Bombay side is known to have killed above one thousand Bustards with his rifle; chiefly, I believe, in the Deccan and Southern Mahratta country. A young Bustard, or a full grown hen bird are very excellent eating; the flesh is dark, and very highly flavored; but in an adult cock it is rather coarse.

A large Bustard has been seen in various parts of China which is perhaps this species, or some closely allied one, may-be, *Otis lucionensis*. A very closely allied species, *O. australis*, Gray, occurs in Australia, where known, to some of the Colonists as the Wild Turkey. Other species are *Eup. nuba*, Rüpp; *E. ludwigi*, Rüpp; *E. caffra*, Licht. (*Stanleyi*, Gray); *E. Denhami*, Children; *E. arabs*, L. (*abyssinica*, Gray); and *E. kori*, Burchell.

The European Bustard, *O. tarda*, Linnæus, belongs to restricted *Otis*. It has a long white moustachial-tuft. The short limbs, short bill, and general form give it quite a different aspect to that of the Indian Bustard, and I can understand its being called a Turkey. It is found throughout Eastern Europe and Central Asia, and used to be occasionally captured in England; and its peculiar attitudes during the courting season have been ably illustrated by Wolf in his Zoological Sketches.

Gen. HOUBARA, Bonaparte.

Syn. *Chlamydotis*, Lesson.

Char.—Legs rather short; neck of the male furnished with a ruff, and occasionally crested; bill rather lengthened, much depressed at the base.

The ruffed Bustards are birds of moderate size, frequenting the open sandy deserts, the type of which is *Otis houbara* of Gmelin,

from Northern Africa, which occasionally passes over into Spain. One species is found in the North-western Provinces of India.

837. Houbara Macqueenii, Gray.

Otis, apud Gray—Hardwicke Ill. Ind. Zool.—Gould, Birds of Asia, pt. 111, pl. 8—O. marmorata, Gray, Hardwicke, Ill. Ind. Zool. 1, pl. 60 (the female)—*Tilaor*, H.—*Obarra* in the Western Punjab—Hurriana Florikin of Sportsmen in the N. W. P. —figured in *Bengal Sporting Magazine*, 1833.

The Indian Houbara Bustard.

Descr.—Male, head beautifully crested, the crest consisting of a series of lengthened slender feathers in the centre of the crown, white with a black tip in front, wholly white behind; upper plumage, including the neck, pale buff, somewhat albescent on the wing-coverts and deeper on the back; upper tail-coverts and tail all delicately and minutely pencilled with black, and each feather with a sub-terminal black band visible externally, and another at the base of the feathers; upper tail-coverts with the black bands narrower, distant, and more or less ashy; tail banded with bluish-ashy, and all the lateral feathers broadly tipped with creamy white; greater wing-coverts tipped with white; primaries white at their base, black for the terminal half, and most so on the outer web; lesser wing-coverts and scapulars more or less spotted with black, not barred; the shorter quills and the winglet black, the former tipped with white; the cheeks are white, with black shafts and tips; the throat white; neck fulvous ashy; belly and lower parts, including the lower surface of the wings, white; under tail-coverts slightly barred; the neck-ruff in its full integrity during the breeding season begins from the ear-coverts, the feathers are moderately long, about 2 inches, and entirely black and silky; on the sides of the neck they are at least 6 inches long, white at the base and with black tips; and, where they terminate are still longer, wholly white, varying in texture and with more or less disunited webs, very fine and curving downwards below.

Bill horny slate-color; irides bright yellow; legs greenish-yellow. Length 25 to 30 inches; extent 4 feet; wing 14 to 15 inches; tail 9 to 10; tarsus $3\frac{3}{4}$; bill at front $1\frac{1}{2}$. Weight $3\frac{1}{4}$ to $3\frac{1}{2}$lbs. (Adams states the iris to be black, and the sclerotic yellow.)

The male in non-breeding or winter plumage, appears to want the fine crest, and in some, apparently, the greater part of the ruff, as in the one figured in Hardwicke's Illustrations. A figure among Burnes' drawings represents the male bird with his coronal crest, but having the upper portion only of the neck-ruff, which forms a conspicuous ear-tuft as in the *Likh* Florikin, but of ordinary shaped feathers. Can the ruff also be a seasonal ornament of the Cock-bird? This is not alluded to in any of the notices of the Indian *Houbara* that I have seen, but is not unlikely.

The female is said, by the writer of the article in the *Bengal Sporting Magazine* alluded to above, to resemble the male; and a specimen, supposed to be that of a female killed at Hansi, agreed, says Mr. Blyth, "very well with Hardwicke's figure, except that the mottled black patches on the upper parts are smaller, and more numerous, and scarcely appear on the wings which should have been colored paler; the pencilling in front of the neck is very delicate; the tail is banded with light ashy (appearing blue) slightly bordered with black. The coronal feathers are all, in the mass, considerably lengthened, there is no indication whatever of the medial crest; the lower third of the lateral neck-tufts are white, but the front of the neck, below the dull white throat, is uniform pale buff, minutely freckled with black, and at its base are some lengthened plumes of a pale ash color impending the breast."

Another specimen agrees nearly with the Hansi bird, but has a slight crest, or apparently the remains of a crest in process of being shed, confined to the forehead only, and there are but few traces of white upon the black or upper tuft of lateral neck plumes. Mr. Blyth is inclined to regard the crest as a distinctive characteristic of the breeding season only, when it would probably be more developed in the male than in the female.

I am strongly inclined to think that *O. marmorata*, Gray, in Hardwicke's Illustrations, is intended for the female in ordinary attire. It has generally been considered as the female of *Sypheo-*

tides bengalensis, but the whole style of the markings is that of the Houbara rather than of the Florikin. The only difference is that the white of the wing is not shown; but, on the other side, the primaries of the hen Florikin are black. It may, indeed, be a young Houbara.

According to Captain Boys the female assumes the ruff in the breeding plumage but not the crest; but so few observations have been recorded about this bird, that it is yet possible (and probable from analogy) that the hen bird possesses neither crest nor ruff. The female of the African Houbara, according to Temminck, has neither crest nor ruff. The figure among Burnes' drawings may be that of a young male in his first breeding season before the ruff had been fully developed; and in this drawing and that of *marmorata*, the irides of both are represented as vinous red, whilst that of the adult is said to be yellow. This bird is so exceedingly similar to the African Houbara (*H. undulata*) that I consider them to be doubtfully distinct, but Gould and other late writers still separate them, the black on the crest of the Indian bird being one of the chief distinctions.

The Indian Houbara is found throughout the plains of the Punjab and Upper Sindh, occasionally crossing the Sutlej and the Indus lower down, and it has been killed at Ferozepore, Hansi, and in various parts of Hurriana, but no records exist of its occurrence eastwards of Delhi. It is probably a permanent resident, as no notice is given of its occurring at any particular season. It frequents open sandy and grassy plains, or undulating sandy ground with scattered tufts of grass, also wheat and other grain fields; and is generally met with in such bare and open ground that, being shy and wary, it is approached with difficulty, except in the heat of the day, when it lies down in a thick tuft, or other shelter, and can be approached with ease. Major James Sherwill informed me that it is very abundant across the Indus at Derajat and towards the frontier of Sindh; and that a black hawk which hunts in pairs often kills a wounded bird, and has been seen to strike a sound one. The Houbara is much hawked both in the Punjab and Sindh, and the Falcon exclusively used for this purpose is the *Charragh* (*Falco sacer*, vol. 1, p. 30). It

occasionally baffles the Falcon by ejecting a horribly stinking fluid which besmears and spoils the plumage of the hawk; just as, in Africa, its congener is stated to behave towards the *Sakr* falcon. Adams states that it is very destructive to young wheat fields in winter, eating the young shoots, but its chief food is doubtless insects of various kinds. The flesh is said to be exceedingly tender, and is often so loaded with fat, that skins are with difficulty dried and preserved.

This species is common in the bare stony plains of Affghanistan, where it is stated to occur in packs of five or six together, to fly heavily, and for a short distance only, soon alighting and running, and is there called *Dugdaor*. It also occurs in various other parts of Asia, in Mesopotamia and elsewhere; it has been occasionally killed in Europe, and one specimen was shot in England in Lincolnshire, which had its craw filled with caterpillars, snails, and beetles.

The egg of this species procured in Mesopotamia, is figured in a late volume of the Illustrated Proceedings of the Zoological Society. It is of the usual color. *H. undulata*, the Houbara of Northern Africa and Arabia is often killed in Spain, and is said to be a great delicacy. *O. ruficrista*, A. Smith, perhaps belongs to this genus.

Gen. SYPHEOTIDES, Lesson.

Syn. *Comatitis*, Reichenbach.

Char.—Bill moderately long and broadish; legs lengthened, with a large portion of the tibia bare; in nuptial plumage the male with more or less white wings, and mostly black plumage, highly crested or with ear-tufts, and, in some, the breast plumes greatly developed. Females larger than the males.

This genus comprises the large Florikin of Bengal, and the lesser Florikin of Southern India, called the *Likh* or *Leek* in the North. In both of these species, the hen bird undergoes no change of colour at the vernal moult, but is considerably the larger and heavier bird; whilst the cock changes to nearly all black, and a crest or ear-tuft is developed. The down at the base of the body-feathers is a beautiful rosy-pink colour, and these are very loosely set, coming off very readily.

838. Sypheotides bengalensis, Gmelin.

Otis, apud Gmelin—Blyth, Cat. 1540—O. deliciosa, Gray—Hardwicke, Ill. Ind. Zool. 1, pl. 61 and 62—O. Himalayana, Vigors—Gould, Cent. Him. Birds, pl. 73,74,75—*Charras*, or *Charaj*, or *Çharaz*, H.—called *Dabar* in the Nepal Terai.

The Bengal Florikin.

Descr.—Male, in full breeding dress, has the whole head, which is very fully crested, neck, breast, and lower parts, with the thigh-coverts, deep glossy black; the plumes of the breast elongated, forming a full breast-tuft, and the feathers of the neck in front also lengthened; the back, with the scapulars and the tertiaries, rump, and upper tail-coverts, rich olive buff, closely and minutely mottled with jet black zig-zag markings, and a black dash in the centre of each feather; shoulders, wing-coverts, and quills, pure white, with the tips, shafts, and outer edges of the first three primaries only black; tail black, minutely mottled with buff, and with a broad white tip.

Bill dusky above, yellowish beneath; irides brown; legs dingy pale yellowish; the knee-joint and the toes livid blue. Length 24 to 27 inches; extent 44 to 47; wing 14; tail 7; tarsus 6; bill at front 1¼; weight 3½ lbs.

The female has the head (which is moderately crested), and the whole upper plumage pale fulvous, with black and brown mottlings, barrings and vermiculations; the ear-coverts are whitish, and the neck is minutely dotted with dark lines; the primaries are banded dark brown and fulvous. Irides dull yellow; legs dirty yellow. Length 28 to 29 inches; extent 50. Weight 4 lbs.

Young birds are probably at first colored like the females. Males, in winter dress, (perhaps only the younger birds,) have the head, neck, and wing-coverts as in the female, the primaries white, and more or less of the lower plumage black, as in one of Gould's figures. Many birds in this state of plumage are killed during the cold weather and even as late as July. I think it doubtful if young males assume this plumage the first year, and I am inclined to consider that it is the winter dress of all except, perhaps,

very old males. Perhaps males of the previous year do not assume the full breeding dress at the first spring moult; and it is possible that older birds may always retain it more or less, for in February I have shot Cock-birds with the whole head and neck black, but the crest and pectoral plumes not developed, and the feathers of the neck thin and short. Hodgson indeed asserts that the Cock bird always retains his fully adult livery, but that the crest and breast-hackles, in their most entire fulness, are only assumed as a nuptial dress. I have not myself had sufficient opportunities to decide on this point; but, judging from the analogy of the Likh Florikin, I would be inclined to think that all, except perhaps very old birds, do lose part of this black plumage on the neck and wing-coverts in an autumn moult; but that they assume this somewhat irregularly in point of time. In these imperfectly colored birds, too, the back, upper tail-coverts, and tail are lighter, with less black, and more of a fulvous hue with brown markings.

Hodgson says that the sexes are equal in size. I have measured and weighed many lately, and invariably found the difference nearly as great as that mentioned above, and the difference of colour in the irides of the two sexes is apparently constant. Analogy with the Likh Florikin would also suggest the inferiority in size of the male bird, which is, however, more marked in that species.

This fine bird is found throughout Lower Bengal north of the Ganges, extending to the south bank above the junction of the Jumna, and thence spreading through the valley of the Jumna into Rajpootana, the Cis-Sutlej States, and parts of the Punjaub; in the east it occurs in Dacca, Tipperah, Sylhet and Assam, and northwards to the foot of the Himalayas. It frequents large tracts of moderately high grass, whether interspersed with bushes or otherwise, grass churrs on rivers, and occasionally cultivation, but it appears to be very capricious in its choice of ground, several often congregating in some spots to the exclusion of others that seemed equally favorable for it. From February to April it may be seen stalking about the thin grass early in the morning, and it is noticed to be often found about newly burnt patches; or one or more may be noticed winging their way to some cultivated spot, a Pea-field,

or Mustard field, to make its morning repast; after which it flies back to some thicker patch of grass to rest during the heat of the day. Birds, at this time, as well as during the earlier part of the year, are usually found singly, sometimes in pairs, male and female not far distant from each other; or, as stated previously, three or four will be found in some favored spot.

According to Hodgson, the Florikin is neither monogamous, nor polygamous, but the sexes live apart at no great distance; and this appears to be very probable. The Florikin breeds from June to August. At this season the Cock-bird may be seen rising perpendicularly into the air with a hurried flapping of his wings, occasionally stopping for a second or two, and then rising still higher, raising his crest at the same time, and puffing out the feathers of his neck and breast, and afterwards dropping down to the ground, and he repeats this manœuvre several times successively, humming, as Hodgson asserts, in a peculiar tone. Such females as happen to be near obey this saltatory summons; and, according to Hodgson, when a female approaches, he trails his wings, raises and spreads his tail, humming all the while like a Turkey-Cock. I have seen the Cock-bird performing this nuptial dance repeatedly, but have not witnessed the subsequent ceremonials, which, however, are likely enough.

At this time the hen Florikin is generally to be found in lower ground and thicker grass, and is flushed with difficulty, running far, and almost allowing herself to be walked over. She lays from two to four eggs, in some sequestered spot, well concealed in the grass, of a dull olivaceous tint, more or less blotched and coloured with dusky. Hodgson calls them sordid stramineous, minutely dotted and more largely blotched and clouded with black; he also states that the young remain with their mother for nearly a year; but I look on this as doubtful. Two females are said not unfrequently to breed near each other.

The flight of the Florikin is a steady, flapping flight, of no great speed, and it seldom flies very far before alighting. It is occasionally hawked with the *Baz* and *Bhyree*. It feeds chiefly on insect food, grasshoppers, beetles and caterpillars, but will also eat small lizards, snakes, centipedes, &c.; and Hodgson says

sprouts and seeds of various plants, and that their diet is chiefly vegetable. This, however, is opposed both to my own experience, and the analogy of the other members of this family. It occasionally, however, does eat sprouts and flowers of certain plants, but whether from choice, or taken in along with some grasshopper or beetle, I cannot say.

When feeding, or on bare ground, the Florikin is shy and wary, and will often rise at some distance, but sooner or later takes refuge in a thicker patch, and may be approached with ease; or it will elude the gunner altogether by running to some distance, or squatting. In the heat of the day it is generally flushed pretty close, even when the sportsman is on an elephant. In general, it is a silent bird, but if suddenly startled will rise with a shrill metallic *chik-chik*, occasionally repeated during its flight. The Florikin is highly esteemed for the table, being considered by some the most delicious game in the country; the flesh is brown without, with a layer of white within, juicy, and of a very high flavour. In some districts it is eagerly sought for by sportsmen, but is most frequently, perhaps, seen when tiger or large game are being hunted for with a long line of elephants, and consequently many escape being fired at. The churrs of the Burhampooter river are said especially to abound with Florikin, even to upper Assam. Parts of Rungpore, Purneah, and Goruckpore, all afford fair Florikin shooting, as do many portions of the N. W. Provinces, from Delhi to Rohilcund and Oude.

839. **Sypheotides auritus**, LATHAM.

Otis, apud LATHAM—JARD. and SELBY, Ill. Orn. pl. 40, 92—Belanger, Voy. aux Ind. Orient. Zool., pl. 10—JERDON, Ill. Ind. Orn. pl. 33.—BLYTH, Cat. 1542—O. fulva, SYKES, Cat. 167—JERDON, Cat. 282—*Charaz* or *Charas*, H. in the South of India—*Chulla charz*, H. in some parts—*Likh*, H. in Hindoostan—*Tan-mor*, Mahr.—*Kan-noul*, Can.—*Niala nimili*, Tel., the last three names signifying Ground pea-fowl—*Wurragu koli*, Tam.—*Khartitar*, of the Bheels near Mhow, *i. e.*, Grass-partridge—vulgo, *Ghas ka murghi*, or Grass Fowl.

The Lesser Florikin.

Descr.—Male, in full breeding plumage, with the head, neck, ear-tufts, medial wing-coverts, and the whole lower plumage deep black, the chin alone being white; lower part of the hind neck and a large patch on the wing white, the rest of the plumage fulvous, beautifully and closely mottled with dark brown; the first three primaries plain dusky brown, the remainder both barred and mottled with brown. The down at the base of all the feathers is a beautiful pale dull rose-colour, and the quills, when freshly moulted, have a beautiful bloom, mingled pink and green, which however soon fades. The ear-tufts are about 4 inches long, and have usually three feathers on each side; with the shaft bare, and a small oval web at the tip, curving upwards. The primaries are much acuminated, sometimes ending in a point almost as fine as a needle.

Bill dusky above, the edges of the upper, and all the lower mandible yellowish; irides pale yellow, clouded with dusky; legs dirty whitish yellow. Length 18 to 19 inches; wing 8; tail 4; bill at front $1\frac{3}{10}$; tarsus barely 4. Weight 16 to 18 ozs.

The female has the prevalent tone of her plumage pale fulvous-yellow, the feathers of the head, back, wings, and tail, clouded and barred with deep brown, those on the head mostly brown; the fore-neck with two irregular interrupted streaks, increasing on the lower neck and breast, the lower plumage thence being unspotted and albescent; the hind neck is finely speckled with brown; the chin and throat white; the first three primaries, as in the male, unspotted brown; wing-coverts with only a few bars; axillaries brown.

Bill, legs, and irides as in the male, but the irides generally unclouded yellow. Length 19 to 21 inches; wing $9\frac{3}{4}$; tail nearly 5; bill at front $1\frac{1}{2}$; tarsus $4\frac{1}{2}$. Weight 20 to 24 ozs.

The male, in winter dress, closely resembles the female, but has always some white on the shoulder of the wing; and some of the wing-coverts also partially white; the under wing-coverts being dark brown, whilst in the female they are fulvous. Of course during the vernal and autumnal moults, male birds with every gradation of colour will be met with, and some of these are figured in the *Bengal Sporting Magazine*, and in *Belanger's Voyage*. The differ-

ence between the size of the male and female is much more marked in this species than in the last.

Franklin and Sykes having, in their respective Catalogues, pronounced the common Florikin of Central and Southern India distinct from the Black Florikin, I entered at some length in my Catalogue, and also in my Illustrations, into this subject, and from the latter work I extract the following observations :—

"My reasons for believing the Black and the common Florikin to be one and the same bird, may be here briefly recapitulated.

1*stly*. "All *Black Florikin* hitherto examined have been male birds.

2*ndly*. "The *Black Florikin* agrees exactly in size, and comparative dimensions, with the male of the *common Florikin*, as described fully by Colonel Sykes, but more especially in the length of wing, and acumination of the primary quills, the points insisted on by him, and most correctly so, as the essential points of difference from the female.

3*rdly*. "Some black feathers are in general to be found on every Cock-bird, not however always noticeable till the feathers of the abdomen are pulled aside; and this mottling with black varies from a feather or two to so many that the bird would be considered by sportsmen a *Black Florikin*.

4*thly*. "I have watched the progressive change in birds at Jalnah, where a few couple always remain and breed, from the garb of the female to the perfect *Black Florikin*, and back again from this the nuptial plumage, to the more sober livery of the rest of the year.

5*thly*. "I have seen more than one specimen of the cock-bird in the usual grey plumage, which, from some cause or other, had not as usual dropped the long ear-feathers, but these had, in conformity with the change in the system causing this alteration of plumage, become white.

"These reasons will, I trust, be considered sufficient to convince the most sceptical sportsmen of the identity of the common and Black *Florikin*. Other testimony might be brought forward in support, but I shall only cite that of Lieut. Foljambes, in a brief paper in the Journal of the Asiatic Society of Bengal, who, from observations in Guzerat, where they appear very numerous, states it as his belief that they are the same bird, but that the Black one

is only met with in Guzerat during the monsoon, which, as we shall soon see, is the breeding season."

The Leek or Lesser Florikin is found throughout India, from near the foot of the Himalayas to the Southernmost districts, but has not, I believe, been seen in Ceylon. It is more rare in Northern India and Bengal, but has been killed even in Arrakan. It is most abundant in Central and Western India during the rains, and in Southern India in the cold weather, whilst those that have occurred in Bengal and neighbouring districts have chiefly been seen in the hot weather or commencement of the rains. I saw it on the banks of the Ganges in April and May, and know of its having been occasionally killed in Purneah in May and June. In the Carnatic, Mysore, the Deccan, and Northern Circars, it is chiefly found in the cold weather, from October to February and March; and in the westernmost portion of Central India and Western India, Guzerat, the neighbourhood of Malwah and Indore, and the southernmost portion of Rajpootana, chiefly during the rains, from June to September. The few that I saw in Saugor and the neighbouring country, occurred during the hot weather, at which time they leave the dried-up districts of Southern India, and migrate north in search of suitable shelter and food. As great part of the eastern portion of Central India, from the Godavery to Midnapore and Chota Nagpore, consists more or less of forest and jungles, the majority are drawn westwards into Malwah, Rajpootana, and Guzerat. Few occur in Malabar, but in Southern Canara there is at least one locality where they may be found in the cold weather.

"The lesser *Florikin* frequents long grass in preference to any other shelter. It is, however, often to be met with in grain fields, in fields of Cotton and Dholl, and in the Carnatic so much in those of the grain called *Warragoo*, as to be called in Tamool *Warragoo kolee*, or *Warragoo* Fowl. It feeds chiefly in the morning, and is then easily raised, but during the heat of the day it lies very close, and is often flushed with difficulty. I have known an instance of one being killed by a horse stepping on it. Now and then an exceedingly wary one is met with, which runs to a great distance, and takes wing well out of shot. When

walking or running it raises its tail, as is represented on the drawing, the lateral feathers diverging downwards, whilst those of the centre are the most elevated, as is seen in domestic fowls, &c., forming what Swainson calls an *erect* or compressed tail. The chief food of the *Florikin* is grasshoppers. I have found also blister beetles, (*Mylabris*) *Scarabæi*, centipedes, and even small lizards. When flushed suddenly it utters a kind of sharp 'quirk,' or note of alarm, and it is said also to have a feeble plaintive chirp or piping note, when running or feeding. Its flesh is very delicate, and of excellent flavour, and it is the most esteemed here, of all the game birds. Its pursuit is consequently a favorite sport, and from the open nature of the ground it frequents, it is well adapted for being hawked. I have killed it occasionally with the *Luggur*, but generally with the *Shaheen*, and have already given an account of the manner of hunting it.* Should the *Shaheen*, miss her first stoop, I have seen the *Florikin* accelerate its speed so greatly, that the falcon was unable to come up with it again under 600 yards or so. I have seen one struck dead by the *Wokhab*, *Aquila Vindhiana*; I had slipped a *Luggur* at it, which was in hot pursuit, though at some little distance behind, when two of these Eagles came down from a vast height, and joined in the chase. One of them made a headlong swoop at it, which the *Florikin* most skilfully avoided, only however to fall a victim to the talons of the other, which stooped almost immediately after its confederate, and dashed the poor bird lifeless to the ground. It had not, however, time to pick it up, for I rode up, and the Eagles soared off most unwillingly, and circled in the air long above me. The *Florikin* had its back laid open the whole length."*

A few birds appear to breed in all parts of Southern India, from July to November, for I have put the hen bird off her nest in August in the Deccan, and in October near Trichinopoly; and have heard of the hen having been found incubating still later, up to January indeed; but the majority breed, in Guzerat, Malwa and Southern Rajpootana, from July to September. I have found the cock-bird commencing to assume the black plumage at

* Jerdon's Ill. Ind. Orn. l c.

the end of April, and have killed them with the black ear-tuft just beginning to sprout, hardly any other black feathers having appeared. In other instances I have noticed that these ear-tufts did not make their appearance till the bird was quite mottled with black. The full and perfect breeding plumage is generally completed during July and August. At this season the male bird generally takes up a position on some rising ground, from which it wanders but little, for many days even; and during the morning especially, but in cloudy weather at all times of the day, every now and then rises a few feet perpendicularly into the air, uttering at the same time a peculiar low croaking call, more like that of a frog or cricket than that of a bird, and then drops down again. This is probably intended to attract the females, who, before their eggs are laid, wander greatly; or perhaps to summon a rival cock, for I have seen two in such desperate fight as to allow me to approach within thirty yards before they ceased their battle. The female lays her eggs in some thick patch of grass, four or five in number, (one writer says seven) of a dark olive colour, with or without a few darker blotches, of a very thick stunted, ovoid form, very obtuse at the larger end. During this season the females are very shy and wary, seldom rising, though often running great distances; and when closely approached and unable to run further perhaps without being seen, squatting so close as to allow a man or dog almost to tread on them before they take flight.

I have never put up or taken a young Florikin. Soon after incubation has fairly commenced, the cock-birds appear to leave the breeding district, and gradually migrate southwards. At Trichinopoly about the end of September and beginning of October, the birds first met with are all cock-birds, generally in pretty fair plumage, but very rapidly assuming their more sober winter garb; and females are very rare till much later in the season.

The Lesser Florikin is occasionally snared and brought in alive by some bird-catchers, but the gun is had resort to in general to procure it. It is invariably called *Charraz* by all Mussulmans in Southern India, although Mr. Hogdson asserts that I had no right to apply that name to it, and I have not yet learnt in what particular districts it is called *Likh*,

most probably in the N. W. Provinces. I have not been able to trace the origin of the Anglo-Indian word '*Florikin*,' but was once informed that the little Bustard of Europe was sometimes called *Flanderkin*. Latham gives the word '*Flercher*' as an English name, and this, apparently, has the same origin as Florikin.

The small Bustard of Europe, *Otis tetrax*, L., now classed as *Tetrax campestris*, is stated to have occurred in the Peshawur valley; but as I have not seen a specimen from that locality, nor heard of one having been examined, I shall only give a brief description of the species here, without enumerating it as one of the 'Birds of India.' The bill and legs are short, the male has the usual mottled brown plumage above, the wing-coverts and the base of the primaries white, the rest of the primaries greyish-black, and the secondaries patched black and white; the tail with two dark cross-bars, and the tip and base white; cheeks, ear-coverts, and neck bluish-grey, edged with black, and below this a white ring in the form of a necklace all round the neck. Length 17 inches; wing 9¾. The female has less white than the male, wants the white ring, and the neck is coloured like the back. In winter the males are said to resemble females. This small Bustard, or what in India would be called a Florikin, occurs throughout Central and Western Asia, and North Africa, and is said at times to be gregarious. It is stated to frequent open plains, and to feed chiefly on vegetable matter.

Africa appears to be the Head Quarters of the Bustard family, and there are several forms peculiar to that Continent, whence some spread into Arabia. *Otis rhaad*, Shaw, *O. cœrulescens*. Vieill., (*Verrauxii*, A. Smith), and *O. scolopacea*, Temminck, (*Vigorsii*, Smith), are classed by Bonaparte under *Trachelotis*, Reichenbach; and *O. afra*, Linn., and *O. afroides*, Smith, are placed under *Afrotis*, Bonaparte. The last two Bustards, (if really distinct from each other) have quite the coloration of the *Sypheotides* group; and the same remark applies to *O. rhaad*.

Otis senegalensis, Vieillot., (*rhaad* apud Rüppell) and *O. melanogaster*, Rüppell, are placed under *Lissotis*, Reich. The latter also has much the plumage of a *Sypheotides* in non-breeding dress. Perhaps, from a want of knowledge of the changes of plu-

mage of these birds, some of the above species will require to be withdrawn.

The next great group is that of the Plovers, but some of the forms usually associated with these birds, and popularly called Plovers, are so distinct as to require their distribution into three different families, *Cursoridæ*, or Courier-plovers; *Glareolidæ*, or Swallow-plovers; and *Charadridæ*, or Plovers and Lapwings.

Fam. CURSORIDÆ.

Cursorinæ, Gray.

Tarsi elevated; bill somewhat slender; three toes only. Plumage brown and rufous. Found in the warmer and temperate parts of the Old World.

Courier-plovers resemble Bustards in their anatomy, having a large membranous stomach and short intestines, but they are of small size and do not change their plumage at the breeding season. Representatives of two genera are found in India.

Gen. CURSORIUS, Latham.

Syn. *Tachydromus*, Illiger.

Char.—Bill moderately long, slender, slightly arched throughout and bent at the tip; nostrils oval, not placed in a groove; wings moderate, the first and second quills longest; tail short, even, of twelve feathers; tarsi long and slender, scutellated; lateral toes short, divided to the base; nails small.

The Courier-plovers form a small group distributed over the Old World to the Indian islands, frequenting bare plains on which they run freely; they feed almost entirely on coleoptera and other insects. One species is peculiar to India. Gray makes them a sub-family of the Plovers, but the distinctive points of their anatomy make it desirable to separate them. Degland even places them among the *Otitidæ*.

840. Cursorius coromandelicus, GMELIN.

Charadrius, apud GMELIN—BLYTH, Cat. 1545—SYKES, Cat. 206—JERDON, Cat. 371.—C. asiaticus, LATHAM—Tachydromus orientalis, SWAINSON—*Nukri*, H.—*Yerra chitawa*, Tel., also *Durawayi*, Tel.

The Indian Courier Plover.

Descr.—Top of head bright ferruginous; lores, continued through the eye to nape, black, and a white eyebrow; upper plumage pale ashy or isabella brown; quills and primary-coverts black; chin white; neck and breast pale isabella rufous, deepening on the abdomen to chesnut, and terminating in a black bar on the middle of the belly; lower abdomen, vent, and under tail-coverts white.

Bill black; irides deep brown; tarsus creamy white. Length 9 to 10 inches; extent 19; wing 6; tail 2⅜; tarsus 2¼; bill at front ⅞.

The Courier-plover is found throughout the greater part of India; it is unknown in lower Bengal and the Malabar Coast, is rare in upper Bengal and Behar, and very abundant in the Deccan and Western India. It associates in small flocks, frequenting the barest plains and ploughed lands, and is very abundant on the Cavalry parade ground at Jalna. It runs about rapidly, nodding its head occasionally when it stops, and picks up various insects, chiefly coleoptera and the larvæ of certain grasshoppers. Burgess states correctly that it has the peculiar habit of running for a distance at speed, suddenly stopping, erecting the body, and then starting off again.

It breeds on a hollow in the ground, from March to May, laying usually three eggs, of a pale greenish yellow colour, much blotched and spotted with black, and with a few dusky olive spots. It is rather a silent bird. The eggs of the European bird have been figured in the 'Ibis' vol. 1, pl. 2; they are said to be always three in number, plover-like, with numerous minute red spots on a greenish ground.

Mr. Blyth writes me that *C. isabellinus* apud Horsfield is *Charadrius veredus*, Gould.

Other species are *Cursorius gallicus*, Gmel., (*isabellinus*, Meyer), the cream-colored Courier, found in Africa and the South of Europe, and occasionally met with in England; two or three others from Africa, and one from the Indian islands, *C. rufus*, figured by Gould in his Icones Avium.

Gen. Rhinoptilus, Strickland.

Syn. *Macrotarsius*, Blyth—*Chalcopterus*, Reich.—*Hemerodromus*, Heuglin.

Char.—Bill shorter and more robust than in *Cursorius*, straight, the tip slightly widened and curved; feathers of the forehead advanced; orbits feathered; 2nd and 3rd primaries sub-equal and longest; tarsus long, scutellate, feet short, the outer toe joined by web.

This form combines the large eye and somewhat the colours of some of the true Plovers, especially of the Dottrels, with the lengthened legs and general structure of the Courier-plovers. It is composed of one Indian and two or three African species, one of which, *Cursorius chalcopterus*, Temm., (subsequently separated as *Chalcopterus*) nearly agrees in character with the Indian bird; the other species, *C. bicinctus*, being said by Bonaparte to approximate *Cursorius*. As far as is known of their habits from the Indian bird, they may be said to be a mountain form of *Cursorius*, frequenting rocky hills with thin jungle.

841. **Rhinoptilus bitorquatus**, JERDON.

Blyth, J. A. S., XVII. 254—R. bicinctus apud BONAPARTE, (olim)—*Adavi wuta-titti*, Tel., *i. e.*, Jungle empty-purse.

THE DOUBLE-BANDED PLOVER.

Descr.—Above sandy brown with a faint pink gloss, the dorsal feathers slightly margined with rusty brown, and the wing-coverts more conspicuously with pale rufescent; crown of the head black with rusty lateral margins to the feathers; a broad white supercilium, commencing with the lores, is continued round the occiput, and there is a less defined (but equally conspicuous) rufescent white streak along the mesial line of the head; ear-coverts streaked dusky and ferruginous; throat white, with a broad rufous band below it; this is bordered by a narrow white semi-collar, continued to below the ear-coverts and narrowly edged above and below with dusky, then follows a broad brown gorget, and another white collar, margined above and below with dusky; this again is succeeded by brown, forming an ill-defined band on the lower part of the breast, and the rest of the lower parts are isabelline, with white upper and lower tail-coverts; primaries and their coverts black, the first two primaries largely and obliquely marked

with white, which is reduced to a large sub-terminal spot on the inner web of the third primary, and a small analogous spot on the fourth; tail white at base, extending for two-thirds of the length of the exterior web of its outermost feather; the terminal half of the tail black, passing basally into brown, and all but the middle feathers having a small white spot at the extremity of their inner webs.

Bill yellow at the base, horny at the tip; irides dark brown; legs pale fleshy yellow. Length 9½ to 10 inches; wing 6¾; tail 3; tarsus 2⅝; middle toe with nail not 1; outer toe barely ½; bill at front ¾.

This remarkable Plover has hitherto, I believe, only been procured by myself, from the hilly country above the Eastern Ghâts, off Nellore, and in Cuddapah. It frequents rocky and undulating ground with thin forest jungle, and is found in small parties, not very noisy, but occasionally uttering a plaintive cry. I believe it to be a permanent resident. It is an almost unique instance of a species of Plover having such an extremely limited geographical distribution; and I imagine that hereafter it will be found spread through many parts of the Balaghat district and Mysore. Blyth writes me that *Hemerodromus cinctus*, recently figured in the Ibis, vol. V., is certainly of the same genus as this bird. It appears to be the young of one of the other African species.

Gray and Bonaparte place in this family *Charadrius ægyptius* of Linnæus under the name of *Pluvianus*, Vieill.; and a somewhat remarkable form, *Oreophilus totanirostris*, from Australia. The former has been killed in Europe, and is said by Degland to be intermediate between the Couriers and the true Plovers. It has the middle toe with the claw dilated and finely toothed internally, thus resembling the Pratincoles. It is supposed to be the *Trochilus* of Herodotus, said by him to take leeches and other parasitic animals out of the mouths of Crocodiles.

Fam. GLAREOLIDÆ, Swallow-plovers.

Bill short, arched; gape very large; wings long; tail even or forked; tarsus rather short, reticulated; hind toe present, but small.

The Pratincoles, as they are sometimes called, are a peculiar group of birds which Cuvier placed at the end of the Grallatores as '*incertæ sedis*.' Their anatomy and especially the form of the sternum ally them to the Plovers, of which they are considered a sub-family by Gray; but they appear sufficiently distinct in their external characters, organisation and habits to separate them as a family. Linnæus placed them with the Swallows, which they resemble by their wide gape, short bill, and the forked tail of many; and Blyth even approximates them to *Caprimulgus*. The analogies to the *Caprimulgidæ* are certainly curious. The wide gape, short curved bill, the similar scutation of the foot, with the back toe slightly directed inwards, and the middle claw somewhat pectinated; its mode of flight, semi-nocturnal habits, and hawking for insects in the air all correspond with the night-hawks, and it will be an interesting problem for some future Darwinian to trace out the order of progression, and show the significance of these marks. The sternum is that of the *Charadridæ*, with a double emargination, the tongue is broad and flat, with a thin serrated tip, and the stomach is strong and muscular. Keyserling and Blasius join the Pratincoles with the Courier-plovers to form one family. They are called Sea-partridges by the French from some fancied resemblance to a Gallinaceous bird. They seek their insect food chiefly in the air, but they also run well. They are stated to have a double moult, but do not change the colours of their plumage. They are found in all the warmer and temperate countries of the Old World.

Gen. GLAREOLA, Brisson.

Syn. *Pratincola.*

Char.—Bill short, convex, arched from the middle; gape very deeply cleft; nostrils basal, oblique, semi-tubular; wings narrow, very long and pointed, with the first quill longest; tail short and even, or long and forked; tarsi moderate, reticulated, slender; four toes; the outer toe united at the base to the middle one by a short web; middle claw pectinated; hind toe not touching the ground; nails pointed.

Two species occur in India, the one with a longish forked tail, of the same type as *G. torquata*, of Southern Europe; the other with a short and nearly even tail.

With forked tail, restricted *Glareola* apud Gray.

842. Glareola orientalis, Leach.

Lin. Tr. XIII. 132, with bad figure—Blyth, Cat. 1543—G. torquata apud Jerdon, Cat. 370—Gould, Birds of Australia VI., pl. 23?

The Large Swallow-plover.

Descr.—Upper plumage, including the head, pale hair-brown; orbits white beneath, feathered; quills blackish, the shaft of 1st primary white externally; upper tail-coverts white; tail with the feathers white at their base, broadly tipped with blackish brown; beneath, the chin and throat rufous, surrounded by a black line from the gape; below this the breast and abdomen are rufous earthy, passing into white on the lower abdomen, vent, and under tail-coverts; axillaries and posterior portion of the under-wing coverts chesnut.

Bill black, gape red; feet dusky black; irides dark brown. Length 10 inches; extent 24; wing 7½; tail 4½, forked for about 1 inch; bill at gape nearly 1; tarsus 1¼. The young are spotted with pale fulvous.

This large Swallow-plover nearly resembles *G. torquata* of Europe, but differs conspicuously by its much less forked tail, in this approaching *G. limbata*, Strickl., of Africa. The figure of Gould quoted above has the throat fulvous white with blackish spots, and probably represents a distinct species.

The large Swallow-plover is found throughout India in suitable places, but chiefly in the cold weather, and I am not aware if it breeds in this country. It is generally found near large rivers, occasionally in very large flocks, hawking over the fields of grain or rumnahs of grass, catching insects in the air, and sometimes uttering its peculiar call when flying. Now and then small parties may be seen, long after sunset, flying round and round some small field or cultivated patch, pursuing moths or

beetles, and now and then alighting on the ground. In the middle of the day, it may be seen seated in large flocks at the edge of some tank, or on a sand-bank in the river. It is quite possible that some few may breed in Northern India, but the majority probably migrate to Thibet and central Asia. I saw one pair of these birds as early as July in upper Burmah.

The nearly allied *Glareola pratincola* is found in Southern and Eastern Europe, Western Asia, and Northern Africa. *G. melanoptera*, Nordmann, differing in its black lower wing-coverts, is found in Tartary and other parts of Central Asia, and has been killed in Greece. It is figured by Gould in his Birds of Asia, pt. II., pl. 15, and might occur as a straggler in the N. W. Provinces. Two or three others from Africa are recorded.

With shorter and even tail, *Galachrysia*, Bonap.

843. Glareola lactea, Temminck.

Pl. col. 399—Blyth, Cat. 1544—G. orientalis apud Jerdon, Cat. 369—*Utteran* in Sindh.

The Small Swallow-plover.

Descr.—Upper plumage pale brownish isabella colour; upper tail-coverts white; tail white, tipped with dark brown for about one inch on the centre feathers, diminishing to a quarter of an inch on the outer ones; primaries brown, the first four conspicuously white shafted; the inner web white on the last four or five; secondaries all white, tipped with brown; winglet dark brown; chin, throat, and breast pale isabella colour; belly and under tail-coverts white; axillaries and lower wing-coverts deep brown.

Bill black, the gape red posteriorly; feathered orbits white; irides deep brown; legs dusky green. Length 6½ inches; extent 16½; wing 5¾; tail 2; bill at gape $\frac{3}{14}$; tarsus $\frac{13}{16}$.

The small Swallow-plover occurs throughout the greater part of the country, and is very abundant in some localities, especially near large rivers. Now and then large parties are seen hawking over the plains and fields, but it prefers hunting up and down the banks of rivers, over sandy churrs, and by large tanks. In localities where they abound, vast parties may be seen every evening after sunset taking

a long flight in a certain direction, capturing various insects as they fly. They live entirely on insects which they capture in the air, in many cases coleoptera. Several which I examined had partaken only of a species of *Cicindela*.

I found them breeding at Thyetmyo in upper Burmah, with the young just flown in May; and Mr. Brooks, Civil Engineer, Mirzapore, informs me that he found their nests in a large sandy churr near Mirzapore. The parents endeavoured to entice him away from their nests just like a Plover. The eggs are pale stone colour, with numerous small reddish-brown and a few dull purplish spots.

Another species of this division is recorded from Africa, *G. cinerea*, Fraser.

G. grallaria, T., (*G. isabella*, V.,) from Australia, has enormously long wings and a short even tail, and is separated as *Stiltia*, Bonap.

Fam. CHARADRIDÆ, Plovers.

Bill straight, stout, and moderately thick in some, slender in a few, more or less raised and swollen at the tip; nostrils placed in a long groove; wings moderately long, and pointed; tail usually short; tarsi long, reticulated in most, or scutellate near the feet only; toes usually short, connected at the base by a membrane; hind toe minute or wanting.

The gape in the Plovers is small; the gizzard is large and muscular; and they have moderately long cœca. The fissure in the sternum is very wide throughout.

Plovers are more or less gregarious birds that feed on bare plains, ploughed lands, moors and wilds, or wet meadow land; a few preferring the banks of rivers, sand-banks, or the edges of tanks. They run quickly, feed almost entirely on insects and worms, and the flight of most is easy or rapid. Many are migratory, others appear to be resident in the warm and temperate regions of the Old World. Their eggs are usually four in number, generally of a stone-yellow or green colour, richly blotched. Many are very noisy birds, and have a peculiar shrill or plaintive

cry. Nidificating, as they do, on somewhat open ground, their young are very liable to be taken, and the parent birds feign lameness, and adopt every sort of manœuvre to entice the supposed enemy away from their offspring. Most have a double moult, and in some the change of plumage is very great. All are good and wholesome eating, and some are not surpassed by many game birds. The eggs too, in various countries, are considered a great delicacy.

Plovers differ considerably from Snipes and Sandpipers, with which they are associated by some, in their shorter, stronger and harder bill, adapted for seizing insects and small shells off the surface of the ground, and not for insertion into the soft mud, as they seldom or never enter even shallow waters, most of them preferring dry ground. They have also a generally stouter and more robust make, several have the face nude, or with lappets of skin at the base of the bill, and a few are armed with strong spurs on the shoulder of the wings. In their anatomy they resemble the *Scolopacidæ*, having a strong muscular gizzard, long intestines, and short or moderate cœca.

Plovers may be divided into *Charadrinæ*, or true Plovers, containing the Golden and Ringed-plovers; *Vanellinæ*, or Lapwings; and *Esacinæ* or Stone-plovers; the first, grade into the Courier-plovers through the Dottrel; and the last are nearly related to some of the next family, the *Hæmatopodidæ*.

Sub-fam. CHARADRINÆ—Plovers.

Bill short, somewhat weak, slightly enlarged above at the tip; tarsi shorter than in the next two families, and more reticulated; wings long and much pointed, 1st quill usually longest; tail short, nearly even; hind toe generally wanting.

The true Plovers are mostly birds of small size, and more gregarious generally than the Lapwings, have a speedier flight, and the change of plumage at the spring moult is great in many, some of them becoming as black as the Florikin, others assuming a more or less rufous tinge on parts of the body.

The first genus is distinguished from the others by having a minute hind toe.

Gen. SQUATAROLA, Cuvier.

Char.—Bill enlarged at the tip, both above and below; nasal groove short; a very minute hind toe present, provided with a rudimentary claw; otherwise as in *Charadrius*.

This genus differs from *Charadrius* only in possessing a rudimentary hind toe and claw, and the colours and changes it undergoes at the spring moult are quite similar. Gray in his List of Genera places this genus among the Lapwings, far from its natural place.

844. **Squatarola Helvetica**, GMELIN.

Tringa, apud GMELIN—T. squatarola, LINNÆUS—BLYTH, Cat. 1558—GOULD, Birds of Europe, pl. 230—*Burra battan*, H.

THE GREY PLOVER.

Descr.—In winter plumage, forehead and chin white; streak over the eyes, forepart of the neck, sides of the breast and flanks, white, variegated with spots of brown and ash colour; head and all the upper parts of the body dusky brown, the feathers edged and tipped with greyish white; belly, abdomen, thighs and upper tail-coverts, pure white; beneath the wing some long black feathers arising from the axilla; tail white, towards the tip reddish, with transverse brown bars which become paler and less numerous on the lateral feathers.

Bill black; irides dusky brown; feet blackish grey. Length 12 inches or so; wing 8; tail $3\frac{1}{4}$; bill at front $1\frac{1}{4}$; tarsus 2; mid toe $1\frac{3}{8}$.

In summer plumage the forehead, lores, throat, and whole lower surface, become deep black, edged by white on the forehead and sides of the neck, and the upper plumage is brown, more or less barred with black and white. The young birds differ from the winter plumage only in having the spots on the breast and flanks larger and paler, and the upper parts greyish with white spots.

The Grey Plover is found occasionally throughout India in the cold season, chiefly, perhaps, near the sea coast and in the north of India. I have obtained it from the Madras market, and seen it north-east of Calcutta on the banks of large rivers. It associates in moderately sized flocks, and is somewhat wary. It

inhabits all Europe, temperate Asia, the north of Africa, and Australia; is stated to breed far north, among mountains, and its eggs are said to be very large.

Varieties of the Grey Plovers are given from America and Australia, and one species, *S. rhynchomega*, with a very strong bill, from Abyssinia, is recorded by Bonaparte. Between the Grey and Golden Plovers, the same Ornithologist places *Zonibyx modestus* Licht. (*V. cinctus* Lesson,) figured Zool. Voy. de la Coquille, pl. 43.

Gen. CHARADRIUS, Linn. (as restricted.)

Syn. *Pluvialis*, Brisson.

Char.—Bill straight, short, compressed, swollen at the tip; legs moderate; wings long, pointed, 1st quill longest; tail short.

The plumage of these birds is usually brown spotted with yellow, hence they are called Golden Plovers; in summer the whole lower surface becomes black, the upper plumage at the same time assuming a darker tinge. Several very closely allied species are found all over the world.

845. Charadrius longipes, TEMMINCK.

C. virginicus, apud BLYTH, Cat. 1560—C. pluvialis apud SYKES, Cat. 209, and JERDON, Cat. 359—C. xanthocheilus, WAGLER, GOULD, Birds of Australia, VI., pl. 13?—C. orientalis, SCHLEGEL —*Chota battan*, H.

THE GOLDEN PLOVER.

Descr.—In winter plumage the general colour above is dull blackish-grey, the edges of all the feathers with triangular spots of gamboge yellow; the primaries blackish; tail-feathers banded whitish and dull black; the chin white, front of neck and breast white, tinged with dusky and spotted with dull yellow; the rest of the lower plumage dull whitish; the flanks somewhat spotted with ashy and yellowish.

Bill dull black; irides deep brown; legs and feet dark plumbeous green. Length 10 inches; extent 20; wing $6\frac{3}{4}$; tail $2\frac{3}{4}$; bill at front $\frac{7}{8}$; tarsus $1\frac{3}{4}$.

In summer the upper plumage becomes darker, the ground colour being somewhat deeper, and the yellow spots diminished

in extent; the forehead is white; the cheeks, throat, neck, and middle of breast and abdomen, deep black, edged with white on the sides of the neck, breast, and flanks of abdomen; lower tail-coverts white; primaries black, the stem of the first white towards the tip, and the secondaries tipped with white, as are the median coverts; tail brown, banded with black. Bill and feet deeper black than in winter.

The young have the colors somewhat as in the winter plumage, but the yellow spots above are less marked, the breast is more dusky grey, and they do not become so black the first summer as they do subsequently. Most birds shot early in the season have a good deal of black on the lower plumage, giving them a mottled appearance, and the same in April and May when resuming their summer garb.

The Golden Plover found in India, at first thought the same as the European, was afterwards identified as the American species, *C. virginicus;* more recently it has been considered a distinct species confined to Eastern Asia, and some of the Islands. It is clearly the *C. pluvialis* apud Pallas, as opposed to *C. apricarius*, for, he says, smaller than *apricarius*, but with longer legs. It differs from the European species in its much smaller size, somewhat larger beak, longer legs, with more nude space on the tibia, and having the yellow spots on the lower part of the back more oval. It is now considered to be *longipes*, Temminck, differing from *virginicus* in having the axillaries light grey, and in some few other points. I am unable from want of specimens for comparison, to point out in what it differs from its nearest ally, *C. fulvus* of New Guinea and Australia.

This Golden Plover occurs throughout India in open plains, grassy downs, ploughed fields, and on the edges of rivers, lakes, &c., associating in flocks of various magnitude, and feeding on beetles and other hard insects, worms, &c. It has a shrill whistling call, and flies very rapidly. Many breed in this country, even towards the south, as at Nellore, but some appear to pass northwards for that purpose, and to return in September. The alteration of colour to black, takes place as well by a partial renewal, as by a change in the feather itself.

The eggs are four, of the usual yellowish stone color, with dark brown spots and blotches.

Gray, in his Catalogue of the Birds of the Pacific, gives *C. fulvus*, Gmel., (*xanthocheilus*, Wagler and Gould) as the species found in New Guinea and most of the Pacific islands; whilst *longipes* is said to extend to the Ladrone islands. The American species is *C. virginicus*; and there thus appear to be four races or species, *C. pluvialis* of Europe, Africa, and Western Asia; *C. longipes*, from Central and Eastern Asia including India; *fulvus*, from New Guinea, Australia, and the Pacific Islands; and *virginicus* in America. Some other races are recorded, but probably all will range under one or other of these four.

Gen. ÆGIALITIS, Boie.

Syn. *Hiaticula*, Gray.

Char.—Bill much as in *Charadrius*, but more slender; wings long. Of small size, often with a black collar round the neck, hence they are often called the Ringed-plovers.

There are two types of form in this genus even as here restricted, the one of somewhat stout form with shorter tail, which, at the spring moult, assumes more or less rufous colour on the neck and throat; and the other generally of smaller size and more slender make, with a black collar, and black frontal band, which does not become rufous at the breeding season.

1*st*. Of stouter make, *Cirrepidesmus*, Bonap.

846. Ægialitis Geoffroyi, WAGLER.

Charadrius, apud WAGLER—BLYTH, Cat. 1562—H. rufinus, BLYTH—C. Leschenaultii, LESSON?—C. asiaticus, Horsf?

THE LARGE SAND-PLOVER.

Descr.—Winter plumage greyish brown on the upper-parts, ear-coverts, and beneath the eye, and sides of the breast; the rest of the under parts, with the feathers immediately above the bill, and a streak over the eye, white; primaries darker, and the secondaries partly white on their outer web.

Bill blackish; irides dark brown; orbits blackish; legs greyish green; the toes darker. Length 8½ inches; extent 17 to 18; wing 5½; tail 2; bill at front 1; tarsus 1½.

In summer dress, the forehead, lores, ear-coverts and beneath the eye, are black, having a white mark on each side of the forehead; the neck and breast are bright rufous, contrasting with the pure white throat; the head is more or less deeply tinged with rufous, and the back, and especially the scapularies are partially margined with the same.

This, the largest of the group, is chiefly found near the Sea coast, and at the mouths of large rivers, in considerable flocks. It is found over all India in suitable spots, retiring north in April and May to breed, and it is often brought to the Calcutta market for sale, but not in such numbers as the next species. I have procured it on the east-coast at Madras, and elsewhere, but never far inland. Blyth remarks that it is not till May that birds in summer plumage are procurable at Calcutta, and I never got them in the south of India in that garb. It probably occurs throughout Eastern Asia.

847. Ægialitis pyrrhothorax, Temminck.

Charadrius apud Temminck—C. ruficollis, Cuvier—H. Leschenaultii, Lesson—Blyth, Cat. 1563—H. rufinellus, Blyth—Gould, Birds of Europe, pl. 299—C. cirripidesmos, Wagler—C. cantianus apud Horsfield.

The Lesser Sand-plover.

Descr.—Precisely similar to the last, both in winter and summer plumage, from which it differs chiefly in size, being considerably smaller; the bill moreover differs slightly in shape. Length 7¼ inches; extent 15¾; wing 5; tail 1⅞; bill at front ¾; tarsus 1¼. Bill black; irides blackish; legs plumbeous, darker on the toes.

Like the last, this little Plover prefers the vicinity of the Sea-shore, and large rivers. It is brought in great numbers to the Calcutta market, during the season; and Mr. Blyth has remarked that it does not assume its summer plumage till May. I have procured it in the Carnatic, at Madras, on the Malabar Coast, and elsewhere

also, but more rarely, and seldom far inland. Adams states that he shot it at the Chimouraree lake in Ladakh, and that it breeds there, but that he did not see it in the Punjab. This plover is found throughout great part of Asia and South-eastern Europe.

To this type I consider that the following species also belongs, although placed in the next group by Bonaparte.

848. Ægialitis cantianus, Latham.

Charadrius, apud Latham—Blyth, Cat. 1564—Jerdon, Cat. 362—Gould, Birds of Europe, pl. 298.

The Kentish Ring-plover.

Descr.—Crown of the head and nape light brownish-red, the rest of the upper parts ashy-brown; primaries brown, the shafts white; tail with the central feathers as the back, the two outermost white, and the next partially white; forehead, a broad streak over the eye, and a ring round the neck, white; lores and ear-coverts black, and a black stripe on the forehead; lower parts white, with a large patch of black on each side of the breast.

Bill black; irides brown; feet dusky grey or blackish. Length $6\frac{3}{4}$ inches; extent 13 to 14; wing $4\frac{3}{10}$; tail 2; bill at front $\frac{7}{10}$; tarsus 1 or rather more. The female is said to differ in having the lores and ear-coverts brown instead of black, and less white and black on the head; and the young have neither white nor black markings.

The Kentish Ring-plover is more generally diffused in India than the last two species, being more frequently found far inland on the banks of rivers and large tanks; but, like the others, it prefers the neighbourhood of the Sea-coast, and large rivers near their mouths. It has a wide geographical distribution over the old continent.

H. ruficapilla, Tem., and *H. inornata*, Gould, from Australia, are members of this group; and there are others.

The next group is that of the little Ringed-plovers, which frequent dry sandy plains, occasionally the sandy beds of rivers.

849. Ægialitis Philippensis, Scopoli.

Charadrius, apud Scopoli—Blyth, Cat. 1567—Jerdon, Cat. 360—Sykes, Cat. 210—C. hiaticuloides, Franklin—C. hiaticula, apud Pallas?—*Zirrea*, H.—*Bytu ulanka*, Tel., also *Rewa*.

THE INDIAN RINGED-PLOVER.

Descr.—Frontal zone white, followed by a black band edged with white, which passes over the eyes as a superciliary mark; lores black, passing under the eyes through the ear-coverts; chin, throat, and lower face, passing as a collar round the hind neck, white; succeeded by a broadish black zone or ring which borders the white ring, gradually narrowing behind; upper plumage cinereous-brown; quills brown; tail, with the central feathers ashy-brown, tipped dark brown, the outermost feathers nearly all white, with a brown spot on the inner web, gradually increasing in extent and becoming ashy at the base; lower plumage and under wing-coverts white.

Bill black, yellowish at the base; irides deep brown; orbits yellow; legs yellow. Length $7\frac{1}{4}$ inches; extent $13\frac{1}{2}$; wing $4\frac{1}{2}$; tail $2\frac{1}{2}$; bill at front $\frac{9}{16}$; tarsus 1; middle-toe with claw nearly $\frac{3}{4}$.

The Indian Ringed-plover is found throughout India on open plains, ploughed land, dried up paddy-fields, and the edges of tanks and rivers, as well as on sand banks and churrs. It is generally in small flocks, from half a dozen to twenty or more, feeding not very close to each other, and running about in a lively manner, frequently taking flight, circling round with a cheerful whistling note, and alighting again near the same spot. It feeds on insects. Burgess found them breeding in April on sand banks in the middle of rivers, laying three eggs on the bare sand, of a rich stone-colour, spotted and freckled with grey and brown.

850. Ægialitis minutus, PALLAS.

Charadrius, apud PALLAS—H. pusilla, HORSFIELD apud BLYTH, Cat. 1568—C. minor, apud JERDON, Cat. 361.

THE LESSER RINGED-PLOVER.

Descr.—Very similar to the last but smaller altogether, and with proportionally much smaller legs and feet. The upper plumage is of a somewhat darker shade; the quills are also blacker; the lateral tail-feathers have more white; the base of the lower mandible is more yellow, and the tertials are less lengthened.

Bill black, yellow at the base beneath; irides deep brown; orbits much larger than in the last, yellow; legs yellow. Length hardly 6½ inches; wing 4; tail 2; bill at front $\frac{4}{10}$; tarsus $\frac{8}{10}$; middle-toe and claw $\frac{8}{8}$ or a trifle more.

I procured this small Plover in the Deccan, generally among hills; and also from the top of the Eastern Ghâts inland from Nellore. It has precisely similar habits to the last, but appears to be more generally found in the interior than near the Coasts.

Blyth writes me that the specimen of *H. pusilla*, Horsf., in the India House Museum (in bad order) has the wing 4⅜ long, and is therefore either *H. philippina*, or some other species. Pallas' bird appears to have been a young one, and he did not himself observe it; but his measurements are nearly those of this bird, and he states that it is much smaller than *hiaticula*. It resembles *Æ. minor* of Europe, but appears to be even smaller than that species which is said to have the wing 4⅜ inches. It is perhaps Swinhoe's bird, *H. pusilla*, which, he says, frequents rice fields or fields of dry mould.

There are many other species of *Charadrius* in America, Africa, and Australia. Amongst the foreign forms allied to these Plovers are the Dottrels, *Eudromias*, Boie (*Morinellus*, Bonap.,) containing the well known Dottrel of England, *E. morinellus*, which frequents downs, ploughed land, and hilly-ground, breeding on high mountains. A second species is *E. caspius*, Pallas, from Central Asia, said to have been killed in Europe. *Charadrius obscurus*, Gmelin, and *C. mongolus*, Pallas, are placed by Bonaparte in *Pluviorhynchus*, next the Dottrels, but both *mongolus* and *caspius* appear to be very like the rufous phases of true *Charadrius*. A New Zealand form with lengthened bill, is named *Thinornis*; and this appears to me to grade towards *Hæmatopus*. *Erythrogonys cinctus*, Gould, from Australia also appears to be a very distinct form, having the whole head and broad pectoral band black, and rather long legs. It has, however, four toes, and perhaps belongs to the Lapwings. *Phegornis*, Gray, (*Leptopus*, Fraser) is applied to an African bird, *Leptopus Mitchelli*, of Fraser. Several American Plovers of this group are arranged in various other genera, one of which, at all events, appears to be well marked, *viz.*,

Ochthodromus. *Anarhynchus frontalis*, Quoy and Gaimard, is placed by Gray next *Thinornis*, but perhaps does not belong to this group; it appears to me to have some affinities with *Strepsilas*.

Sub-fam. VANELLINÆ, Lapwings.

Of moderate or largish size; legs lengthened; bill moderately strong; a short hind toe frequently present.

Some are crested; a few have the wings spurred; and there are wattles of skin at the base of the bill in several. The plumage is in masses, and the tail usually white with a dark band.

This sub-family comprises the sections *Vanelleæ*, *Sarciophoreæ* and *Hoplopthereæ* of Bonaparte's *Charadrinæ;* which are, I think, sufficiently characterized apart from the more typical *Charadrinæ* to form a distinct group.

1*st*. Vanelleæ.

With four toes, the hind toe small, wing not spurred, nor in general, any lappets about the bill.

Gen. VANELLUS, Linn. (restricted.)

Char.—Bill moderate, straight, compressed at the base, convex at the tip; nostrils linear in a cleft occupying two-thirds of the upper mandible; wings pointed, 4th and 5th quills longest; shoulder of wing with a tubercle; tail nearly even; a very short hind toe. Head crested.

This genus, as at present restricted, consists of but one species, the well known Pee-wit or Lapwing of Europe.

851. Vanellus cristatus, MEYER.

BLYTH, Cat. 1557—GOULD, Birds of Europe, pl.—. Tringa vanellus, LINN.

THE CRESTED LAPWING.

Descr.—Head with lengthened slender crest, black; behind the eye, ear-coverts, nape, and sides of the neck white; upper plumage green, glossed with purple and coppery, becoming golden

green on the lower back and rump, and with a golden fulvous tinge on the scapulars; primaries black, the first three greyish white at the tip; tail white at the base with a broad black terminal band, broadest on the medial feathers; lores, chin, throat, and breast glossy blue-black; lower breast, abdomen and vent white; lower tail-coverts chesnut.

Bill black; irides hazel-brown; legs orange-brown. Length 12 inches; wing 9; tail 4; tarsus 2.

In winter the chin and throat are white. The female only differs in having, it is said, a shorter crest than the male.

The English Pee-wit is found in India only in the Punjab. It occurs throughout great part of Asia and Europe. It breeds in the Punjab, and the eggs were found by Theobald. Its habits are very similar to those of the Indian Lapwings, and many anecdotes are related of its endeavouring to allure dogs or men from its young by feigning lameness, &c. It is the only species of the genus.

Gen. CHETTUSIA, Bonap.

Char.—Bill stronger than in restricted *Vanellus;* head not crested; plumage ashy; tarsi moderately long, otherwise as in *Vanellus.*

In this genus the technical characters are only slightly marked, but it forms a natural group, the species of which have strong migratory instincts. There are three species in India, none of which breed here; two of them are somewhat rare in most parts of the country, whilst the third is chiefly confined to the Northern, or perhaps the North-eastern part.

The first species differs from the other two in its mode of coloration, partly in structure, and also in its haunts; and it is by some retained in *Chettusia* as restricted.

852. **Chettusia gregaria**, PALLAS.

Charadrius, apud PALLAS—BLYTH, Cat. 1925—Tringa keptuschka, LEPCH.—C. ventralis, WAGLER, JERDON, Cat. 366—C. Wagleri, GRAY—The Black-breasted Sandpiper, HARDWICKE, Ill. Ind. Zool. 2, pl. 50—GOULD, Birds of Europe, pl. 292.

THE BLACK-SIDED LAPWING.

Descr.—Forehead and superciliary band passing round to the occiput white; top of the head black; back of neck and upper plumage generally of an olivaceous brown, tinged with grey; primaries black, secondaries white; tail white with a subterminal black band wanting in the outermost feather; a narrow band from the lores through the eyes, black; sides of head and neck, both in front and on the sides above, pale rufous, passing to brownish on the lower part of the neck, and to brownish-ashy on the breast; middle of the abdomen deep black, bordered posteriorly by deep chesnut; lower belly, vent, and under tail-coverts white.

Bill black; irides dark brown; legs dull black. Length 13 inches; wing $8\frac{1}{2}$; tail $3\frac{1}{2}$; tarsus $2\frac{3}{10}$; bill at front $1\frac{2}{10}$. The female differs only in her somewhat duller tints. The young have the forehead and eyebrow pale rufous, top of the head and back brown with pale rufous borders, and the abdominal region all white.

This is a somewhat rare bird, and I have only seen it in Western India, at Jalna in the Deccan, and at Mhow in Central India. It frequents grassy plains in moderate sized flocks, of from eight to twenty, is rather shy, and has a peculiar cry, which however it does not utter frequently. It is a migratory bird, departing early in the year for Central Asia where, according to Pallas, it breeds; Adams states it to be pretty common during the cold months in fields and wastes near Loodiana; and Irby records it as exceedingly common on open sandy plains in Oudh and Kumaon, in flocks of from six to fifty. He further states that it flies close to the ground, and when on the wing shows a good deal of white. It is found all through Western Asia and the South-east of Europe, and has been killed in France.

Another species of this section, from Africa, apparently is *Chet. macrocercus*, Heuglin, (*crassirostris*, Hartlaub).

The next two birds approximate to each other very closely in plumage, and both frequent the vicinity of water. The white on their wings and tail is of great extent, and both are much paler in their tints than the previous species. One is furnished with a very small lobe of skin near the base of the bill.

853. Chettusia leucura, Licht.

Vanellus, apud Lichtenstein—V. flavipes, Savigny—L'Egypte, Zool. pl. 6, f. 2—Blyth, Cat. 1556.

The White-tailed Lapwing.

Descr.—General colour above brownish-grey, with a reddish purple gloss on the mantle, extending over the tertiaries; head and neck browner and glossless; the throat and around the bill white; breast more ashy, the feathers margined paler; rest of the under parts, with the tail and its upper coverts white, the belly and flanks conspicuously tinged with dull rosy, or a roseate cream hue; primaries and their coverts black; the secondaries and their coverts largely tipped with white, and having a black bar above the white; rest of the wing-coverts like the back.

Bill black; irides brownish red; legs bright yellow. Length 11 inches; extent 23; wing 7; tail 2¾; bill at front 1; tarsus 2⅝.

The White-tailed Lapwing is a rare bird in India. I procured it myself only once, on the margin of the large lake at Bhopal in Central India, in December, where it occurred in small flocks; my attention was first called to it by its peculiar cry. Blyth procured one specimen from the Calcutta Bazaar; it was once procured in the Dehra Doon, and no other record of its occurrence in India is noted. It is however stated not to be rare in Affghanistan, where it is called *Chiric*. Out of India it is chiefly known as an inhabitant of Northern Africa, and is said to be abundant in marshes near Thebes. At the time that Mr. Tristram published his account of its occurrence there, it was stated by him to be rare in European Museums; only one bad specimen existing in the British Museum, and none in that of Paris.

The following species differs from the two previous ones in possessing a small lappet of skin, which led Mr. Blyth to class it in the next genus to which it forms a near link; were it not for its colours and migratory habits it might perhaps be retained in that group. It has been separated as *Vanello-chetusia*, Brandt.

854. Chettusia inornata, T. and Schleg.

Lobivanellus, apud Temminck and Schlegel, Faun. Jap.—L. cinereus, Blyth, Cat. 1555—*Chappour. H.*

The Grey-headed Lapwing.

Descr.—General colour of the upper parts pale greyish-brown, the head, neck, and breast, pure light grey, passing into black on the lower part of the breast, and terminating abruptly, contrasting with the white belly; primaries, their coverts, and the winglet, black; the secondaries and their coverts chiefly white, and the tertiaries concolorous with the back: upper tail-coverts white, slightly tinged with brownish; and tail pure white, having a black subterminal band, broad on its medial feathers, nearly obsolete on the penultimates, and quite so on the outermost.

Bill black; irides pale red; orbital skin, small frontal lobes, and basal portion of the bill, pale yellow; legs bright yellow. Length 15 inches; extent 32; wing $9\frac{3}{4}$; tail $4\frac{1}{2}$; tarsus $3\frac{1}{4}$; bill at front $1\frac{1}{2}$.

This fine Lapwing is not very rare in Bengal, but I have seen it in no other Province. It is stated however by Capt. Irby to be common in Oudh and Kumaon, about swamps and jheels, generally in lots of seven or eight. It is a migratory bird in India coming in the cold season, and departing in April to Central and North-eastern Asia. It is not recorded by Pallas, but it appears to be found in Japan. It is usually seen in moderately large flocks, from eight to a dozen or so not far from water, and when on the wing shews much white. It is generally a silent bird at this season. I have seen it abundant in Purneah, and in Dacca, and it probably will be found in all the countries to the Eastward.

C. macro-cercus, Heuglin, and *C. arabensis*, Eversman, are indicated by Bonaparte, but are perhaps identical with one or other of the last three species.

2*nd.* Sarciophoreæ.

With fleshy wattles at the base of the bill; with four toes.

Gen. Lobivanellus, Strickland.

Char.—Bill moderately long and stout, the horny tip not much elevated; a lappet of nude skin at the base of the bill in front of the eye; shoulder of the wing furnished with a tubercle which

in some becomes developed at the breeding season into a short horny spur; tail even; wings long; a very small hind toe and rudimentary claw.

The Indian species has been separated by Reichenbach under the name of *Sarcogramma*.

855. Lobivanellus goensis, Gmelin.

Parra, apud Gmelin—Gould, Cent. Him. Birds pl. 78—Blyth, Cat. 1554—Sykes, Cat. 207—Jerdon, Cat. 365—Ch. atrogularis, Wagler—*Titai*, *Titi*, *Tituri*, *Titiri* in different parts of India—*Yennapa chitawa*, Tel.—*Al-kati*, Tam., *i. e.*, the Man-pointer.

The Red-wattled Lapwing.

Descr.—Head, back of neck, face, chin, throat, and breast, glossy-black; ear-coverts white continued in a stripe down the sides of the neck and round to the nape; back, scapulars, wing-coverts, and tertiaries, pale brownish green, the wing-coverts glossed with purple; a white band on the wing formed by the greater coverts and partly by the secondaries; primaries and most of the secondaries black; winglet black; tail white with a black band near the tip, the central feathers tipped brown; beneath from the breast white.

Bill red at the base, tip black; eyelid and wattle lake red; irides red brown; legs bright yellow. Length nearly 13 inches; extent 30; wing 9½; tail 1½; bill at front 1⅝; tarsus 3.

This Lapwing is one of the best known birds of India occurring everywhere, from Ceylon up to Cashmere. It is replaced in Burmah by a closely allied race, *L. atronuchalis*, Blyth, in which the white ear patch does not extend round the nape. It is generally found not far from water, though now and then at some considerable distance: it is occasionally seen in the cold season in scattered flocks, but generally in pairs, or single. It feeds on various insects, shells, and worms. It breeds from April to July, laying four large eggs of a rich olive yellow colour with blotches of brown and grey. Its wiles to allure a dog or man away from its eggs or young are quite similar to those recorded of the English Pee-wit, but its cries are still more vociferous. It is a noisy bird at all times, and its

cry has been variously rendered as, "*Did he do it, Pity to do it, Dick did you do it.*" In the South of India it is recorded to sleep on its back with its legs upwards, and the Indian proverb '*Titihri se asman thama jaega*, &c.,' 'can the Pee-wit support the Heavens,' is applied to a man who undertakes some task far above his strength.

V. tricolor, Horsf., (*cucullatus*, Temm.) is a nearly allied race from Java, &c.

Two species from Australia and two from Africa are recorded. The former two, *L. lobatus* and *L. personatus* have very large yellow wattles.

The next group barely differs, but there is no hind toe, and in all the lappets and nude parts are yellow; this group is much developed in Africa.

Gen. SARCIOPHORUS, Strickland.

Char.—Bill more slender than in the last, the tip scarcely elevated; wattles yellow; hind toe wanting; a tubercle at the shoulder; wings very pointed, 1st quill nearly as long as the 2nd, slightly longer than the 3rd.

The following Indian species has been separated from the African ones as a minor group by Bonaparte under the name *Lobipluvia*.

856. Sarciophorus bilobus, GMELIN.

Charadrius, apud GMELIN—Pl. Enl. 880—BLYTH, Cat. 1552—SYKES, Cat. 208—JERDON, Cat. 364—*Zirdi*, H.—*Chitawa*, Tel.—*Jithiri* in North-western Provinces—*Al-kati*, Tam.

THE YELLOW-WATTLED LAPWING.

Descr.—Head and nape black; rest of the upper plumage, including wing-coverts and tertiaries, chin, throat, and upper part of breast, pale ashy brown; a white streak from behind the eye bordering the black head all round; winglet and primaries black; secondaries white at their base, brownish black for the greater part of their length, the white increasing in extent towards the last, and with the tips of the greater wing-coverts forming a not very conspicuous white wing-band; upper tail-coverts white; tail white

with a broad blackish sub-terminal band, evanescent on the outer feathers; beneath, from the breast, pure white.

Bill yellow at the base, black at the tip; lappet pale yellow irides silvery grey, or pale yellow; legs yellow. Length nearly 12 inches; extent 27; wing 8¼; tail 3¼; bill at front 1; tarsus 2½.

The Yellow-wattled Plover is found throughout the greater part of India, and also Ceylon; is rare in forest-clad and very rainy districts, abundant in the drier parts of the country. It is rare in Bengal, but I have seen it in the Purneah district, and it has been obtained occasionally near Calcutta. It frequents dry stony plains, open sandy downs, and arable land, often very far from water; it associates in small flocks, except at the pairing season, and feeds on various beetles, white ants, worms, &c. It has a plaintive cry, much less harsh and loud than that of the Red-wattled Lapwing, which Col. Sykes likens to *Dee-wit, Dee-wit.*

I have found the eggs, three to four in number, of a reddish stone colour, spotted with brown and purplish, on ploughed land and on sand banks.

S. pileatus, Gmel., from Africa, and *S. pectoralis*, Cuv., from Australia, with a small red lobe, belong to the genus *Sarciophorus* as restricted by Bonaparte.

3rd. Hoplopterеæ.

With strong spines on the shoulder of the wings.

There are two or three minor sections in this group, some with a distinct hind toe, others with only three toes. The Indian species belongs to the latter section.

Gen. HOPLOPTERUS, Bonaparte.

Char.—Wings furnished with a long and stout, slightly curved horny spur, present at all seasons; no hind toe; otherwise as in *Vanellus.*

857. Hoplopterus ventralis, CUVIER.

Vanellus, apud WAGLER—HARDWICKE, Ill. Ind. Zool. — BLYTH, Cat. 1549—Char. Duvaucelei, LESSON.

The Spur-winged Lapwing.

Descr.—Head including the long crest, face as far as the middle of the eye, and a broad band from the base of the lower mandible down the chin and throat, glossy black; a white line from behind the eye, bordering the black and meeting its fellow behind; sides of the neck and back pale ashy, gradually passing into the brownish ashy of the back, scapulars, and wing-coverts, and forming a pectoral band, between which and the black throat is a broad white space; quills black, white at their base, the white increasing in extent to the last secondary which is merely black-tipped; primary and secondary coverts white; the shoulder black; winglet white; tail feathers white, with a broad black tip; upper tail-coverts white; abdomen white, with an interrupted black band in the centre.

Bill black; irides deep brown; legs reddish black. Length 12 inches; extent 25; wing 8; tail 4; bill at front 1⅛; tarsus 2½.

The Spur-winged Lapwing is found throughout the greater part of India, but only along the course of the larger rivers. I have seen it on the Godavery, the Nerbudda, the Ganges, and all its tributaries, for it appears more numerous towards the North of India than in the South; I have not myself seen it South of the Godavery, nor is it recorded by Col. Sykes or Walter Elliot. It is usually found single or in pairs, now and then in small flocks, but always in the sandy or shingly beds of rivers, or not far from their banks. It is not rare in mountain streams in the Himalayas, and I have shot it on the banks of the great Rungeet River in Sikim.

Mr. Brooks, C. E., found the eggs of this Lapwing on a sandy churr near Mirzapore; they were of the usual pale stone-green color, with blotches and spots of rich chocolate brown, but varying somewhat both in shape, and in the size and character of the spots.

Other species of this genus are *H. spinosus*, L. (*melasomus*, Swains.), from Africa and Western Asia, occasionally killed in the South of Europe; in Bree's Birds of Europe this species is erroneously quoted as the Indian bird: *H. armatus*, Burchell, (*speciosus*, Wagler), with a still stronger and longer spur, hence

separated as *Xiphidiopterus*, Bonap., and *H. albiceps*, Fraser. An American Lapwing with spurred wing and four toes is *Parra cayanensis* of Gmelin, from which Reichenbach has formed his *Belonopterus*, and *C. cayanus*, Latham, appears to be another species of the same group.

Vanellus melanocephalus, Rüppell, is classed as *Tylibyx* by Reichenbach; and the same Systematist has formed *Stephanibyx* from *C. coronatus*, L., with one or two other American Lapwings.

Sub-fam. ESACINÆ, Stone-plovers.

Syn. *Œdicneminæ*, Bonap.

Of large size; bill very strong and thick, dilated both above and below, and compressed; gonys more or less strongly angulated; no hind toe; legs long.

This sub-family comprises some moderately large Plovers, with very strong and lengthened bills, and with a peculiar mode of coloration. Some frequent jungly and bushy ground, others the stony beds of rivers; they feed on slugs, insects, molluscs and crustacea. They have only one moult, and undergo no seasonal change of colour.

Gen. ESACUS, Lesson.

Syn. *Carvanaca*, Hodgson.

Char.—Bill long, sub-recurved, strong, convex above, considerably compressed; the base thick and rounded; edges sharp, notched towards the tip as in *Ardea*; nares broad, linear, advanced, in a wide groove that extends from the base to the tip of the culmen; otherwise as in *Œdicnemus*.

The Indian member of this genus is referred by Gray and Bonaparte to *Carvanaca*, Hodgson, *Esacus* being reserved for a nearly allied Australian Plover, *E. magnirostris*, Geoffroy.

858. **Esacus recurvirostris**, CUVIER.

Œdicnemus, apud CUVIER—JERDON, Cat. 368—BLYTH, Cat. 1547—Carvanaca grisea, HODGSON—*Abi*, H. of Falconers—*Burra*

karwanak, H.—*Talur*, in Sindh—*Gang titai*, in Bengal, *i. e.*, the Ganges Lapwing.

The Large Stone-plover.

Descr.—General colour above brownish sky-grey; forehead white; eyebrow, ear-coverts, and moustaches blackish; shoulders, winglet, some of the outermost wing-coverts, quills, and tip of tail blackish; wings and tail irregularly but broadly banded with white; beneath, with the lower surface of wings and tail, white.

Bill greenish-yellow at the base, black at the tip; irides bright pale yellow; legs yellow. Length 19 to 20 inches; extent 36; wing 11; tail 4½; bill at front 2½; tarsus 3¼.

This large Plover is found throughout India, frequenting the Sea-coast occasionally, but chiefly the stony beds or banks of large rivers, alone or in small parties. It feeds on crustacea and shell fish, with occasionally insects. Hodgson states that it is migratory to Thibet in summer, but I have seen it in Southern India at all seasons, though I have never procured its eggs; and Layard found it breeding in Ceylon. It is a very shy and wary bird, though at times it will suffer a moderately near approach. I have never seen it more than a few yards away inland from the banks of the rivers. It feeds much by day but probably also partially at night, and has a loud harsh creaking note. Layard obtained the eggs in Ceylon, of 'a pale nankeen colour, with numerous brown blotches.'

Gen. Œdicnemus, Cuvier.

Char.—Bill very stout, thick, straight, compressed, culmen raised, the tip inflated both above and below; lower mandible with a strongly marked angular gonys; nostrils long, median in a groove about half the length of the bill; wings moderately long, 2nd quill longest; tail of twelve feathers, somewhat lengthened, much rounded; tarsus long, reticulated; three toes only, united at the base by a short membrane; nail of the middle toe dilated, trenchant, hollowed out beneath.

This genus comprises several closely allied species from the warm and temperate regions of both Continents. The plumage is

brown and striated, the eye very large, and the habits mostly nocturnal. The plumage somewhat recalls that of *Attagen* and *Thinocoris*, which perhaps ought to be placed near them. They live chiefly in arid and stony districts, also in thin jungle; they have only one moult, and no seasonal change of plumage whatever. The bill has been by some compared, not unaptly, with that of the Nuthatch.

859. Œdicnemus crepitans, Temminck.

Blyth, Cat 1548—Sykes, Cat. 212—Jerdon, Cat. 367—Gould, Birds of Europe, pl. *Karwanak*, H.—*Barsiri*, H. of some; *Lambi* of Falconers—*Kharma*, Beng.—*Kalleydu*, Tel.—*Kana mosal*, Tam., *i. e.*, Jungle-hare—Bastard Florikin of some Sportsmen.

The Stone-plover.

Descr.—Upper parts reddish ashy with a longitudinal dusky stripe down the middle of each feather; a pale bar on the wing formed by the tips of the coverts; quills black, the first with a large and conspicuous white spot near the middle, the second with one somewhat smaller; tail with all the feathers, except the central ones tipped with black; lores, cheeks, throat, belly, and thigh-coverts white; the neck and breast tinged with reddish earthy, and marked with fine longitudinal streaks; under tail-coverts reddish ashy.

Bill pale yellow at the base, black at the tip; irides and orbits yellow; legs and feet yellow. Length 16 to 17 inches; wing 9; tail 4½; bill at front 1½; tarsus $3\frac{4}{10}$.

The well known Stone-plover of England occurs in most parts of India down to the extreme South, frequenting bushy wilds, cleared spots in jungle, low, stony and jungly hills, also now and then patches of grass with bushes interspersed, but generally in some retired and secluded spots. It is more rare in Lower Bengal and in Mallabar than in most other districts. When a flock of these birds is disturbed, they fly a short distance, and then run and hide themselves, occasionally squatting so close as to have received from the Tamuls the name of the *Jungle-hare*. They are permanent residents in India, laying generally two or three

eggs of a stone-yellow colour, blotched and spotted with dark brown and grey, in March and April.

It is a favorite quarry for the *Shikra* with natives, for which its habits of lying close well adapt it, and it generally falls an easy prey. It is excellent eating, being very high flavored, and it has received the name of Bastard Florikin among some sportsmen in the South of India. It feeds almost entirely on insects, is quite nocturnal in its habits, and its wild, long cry may frequently be heard at night close to many stations, where you may hunt long, without finding it in the day time. The Stone-plover is found throughout a great part of Europe, Asia, and Northern Africa.

Two or three allined species from Africa are recorded, and one or two from America; one from Australia with somewhat longer legs, *C.* (*grallarius*, Latham), is separated as *Burhinus*, Illiger. It appears intermediate between *Œdicnemus* and *Esacus*.

Fam. HÆMATOPODIDÆ, Bonap., Sea-plovers.

Feet with three toes, and with a small hind toe raised above the others; plumage variegated; bill varied, stout; legs long or moderate. Mostly Sea-shore birds.

The birds that I include in this family are of three very different types, which might each form a distinct family, but a certain similitude in coloration and habits is apparent. The Turnstones, Oyster-catchers, and Crab-plovers are the three forms, to each of which I shall give the rank of a sub-family. Bonaparte places the Turnstones and Crab-plovers (*Dromas*) together in one family, and the Oyster-catchers in close proximity to them, in another; Gray in like manner, groups the first two sub-families together but includes them among the Plovers. All frequent the Sea-shore chiefly, the Turnstones alone occasionally wandering inland; they run quickly on the sand, and pick up various crustacea, shell-fish, &c.

Sub-fam. STREPSILINÆ, Bonap.

Cinclinæ, Gray.

Bill short, conical, with the culmen flattened, the tip compressed and truncated, upper mandible slightly turned upwards; nostrils

basal; wings long, very pointed, the 1st primary longest; tail rounded, of twelve feathers; tarsus short; tibia barely denuded; toes divided to the base; a moderate hind toe; claws short and pointed.

This sub-family is composed of one genus, with only one species, found on sea-coasts over all the world.

Gen. STREPSILAS, L.

Syn. *Arenaria,* Brisson—*Morinella,* Meyer—*Cinclus,* Moehring and Gray.

Char.—Those of the family of which it is the sole genus.

This remarkable type has the bill something like that of a Nuthatch, but stronger; it is a bird of small size, and has a double moult. Cuvier classed it, next the Phalaropes in the following family, but its strong bill, coloration, and habits are quite those of the present group.

860. Strepsilas interpres, LINNÆUS.

Tringa, apud LINNÆUS—BLYTH, Cat. 1602—JERDON, Cat. 356.—GOULD, Birds of Europe, pl.

THE TURNSTONE.

Descr.—Head and neck white, the crown of the head, with some black stripes; a narrow black frontal band, continued behind the eye and meeting another narrow stripe of the same colour from the base of the lower mandible; shortly beyond, these unite into an incomplete collar, extending back along the sides of the neck, and in front expanding and forming a broad gorget covering the breast, and which, at its termination below, sends up another incomplete band towards the shoulder of the wing; mantle and wings chesnut brown mixed with black, especially on the scapulars; coverts edged with grey and whitish; primaries black, stem of the 1st white; secondaries tipped greyish; back, rump and upper tail-coverts white, crossed on the rump by a black band; tail white, with a broad sub-terminal band of black; lower parts white.

Bill black; irides deep brown; legs orange yellow. Length 8½ inches; wing 6; tail 2½; bill at front ¾; tarsus 1.

The female differs only, it is said, in having the colours not so distinct, and the white on the head and neck less pure. In winter

plumage, the colors are not so pure and rich in tint as in the summer. The young have the upper plumage and sides of the neck and throat dark ashy-brown, the feathers edged paler, and the lower parts white. After the autumn moult the young are stated to be more pronounced in their coloration; and at the spring moult they assume the adult plumage.

The Turnstone is not a common bird in India, and chiefly frequents the sea-coast and rocky beds of large rivers. I have procured it above 200 miles inland, in the Deccan, on the edge of a large tank, and more abundantly on the sea-coast near Madras; Mr. Blyth has frequently obtained it from the Calcutta Bazaar. It is found throughout both Continents, chiefly on the sea-coast; it is said to lay on the sand or bare rock, well concealed under a projecting stone or tuft in some cases, four rather large eggs. They are pale greyish or greenish in color with large spots of grey and brown. It is stated to feed chiefly on small shells, and various insects; to live well in confinement in gardens, like Plovers, and to be easily tamed.

Bonaparte and Gray place next Strepsilas *Aphriza*, with two species, *Tringa borealis*, and *T. virgata* of Latham; and *Pluvianellus socialis* of Hombron.

It is possible that *Anarhynchus frontalis*, a remarkable bird from the Oceanic regions may belong to this sub-family.

Sub-fam. DROMADINÆ, Gray, (in part.)

Bill lengthened, compressed, smooth, barely grooved, very strong, with the culmen gently arching towards the tip which is pointed; lower mandible strongly angulated; gonys long, commencing near the chin; bill slightly descending at first from the chin; nostrils oval, lateral, near the base, pervious; wings long, equal to the tail, 1st primary longest; tail even, or barely rounded; tarsus very long, as also the bare portion of the tibia; feet much webbed, especially the outer and middle toe. Bonaparte makes this a separate family *Dromadidæ*, and places it between the *Chionidæ* and *Hæmatopodidæ*.

Gen. DROMAS, Paykull.

Syn. *Erodia*, Stanley, after Latham.

Char.—Those of the sub-family of which it is the only representative.

This remarkable genus is composed, as at present known, of a single species found on the shores of the Indian Ocean, Bay of Bengal, Red Sea, &c.; its situation is considered very doubtful, and many different affinities have been assigned to it. Cuvier placed it next *Anastomus*, of which, says he, it has the feet and contour. Gray very unfortunately, I consider, placed it among the *Scolopacidæ*, between *Himantopus* and the *Tringæ;* and Blyth, from consideration of the young plumage, considered it as allied to the Terns. I have for long thought its proper place was not far from *Œdicnemus*, among the Plovers, and I was glad to find that Bonaparte placed it with the Oyster-catchers, which this bird thus connects with the true Plovers. Blasius with great judgment considered it to be an aberrant *Esacus*. It is among the Plovers what *Himantopus* and *Recurvirostra* are among the *Longirostres*.

861. **Dromas ardeola**, Paykull.

Blyth, Cat. 1627—Ammoptila charadroides, apud Jerdon, Cat. 372—Erodia amphilensis, Stanley—Temm. Pl. Col. 362—Salt, Travels in Abyssinia, pl. 31—Jard. and Selby, Ill. Orn. pl. 157.

The Crab-plover.

Descr.—Whole head, neck, wing-coverts, lengthened tertiaries, scapulars, and lower parts, white; mantle, interscapular region, greater wing-coverts and primaries black; some of the tertiaries and the tail reddish ashy, paling on the inner webs.

Bill black; irides brown; legs plumbeous. Length 15 inches; wing 8¾; tail nearly 3; bill 2½; tarsus 3⅝; middle toe and claw 1⅝.

This curious bird was first observed by Mr. Walter Elliot on the West coast of India, and subsequently I found it on the East coast near Nellore, far from rare at the mouths of rivers and along back waters. It lives in small flocks on the banks of the rivers or sea shore, feeding, especially on the parts that have been left bare by the tide, on small crabs and other crustacea, and perhaps also on shell fish. It doubtless breeds in this part of the country, as I observed it during the hot weather, as well as at other times, but I was not fortunate enough to find the nest.

It runs actively about, and flies well. It is stated to breed in society in rather deep holes in the sand on some of the islands of the Red Sea, and Layard found it breeding in Ceylon. The eggs which he sent, to the Museum of the Asiatic Society, Calcutta, as of this bird, are quite Plover-like, and of unusually large size. Latham who figures it as the Abyssinian Erody, G. H., pl. 149, considers it to be *Ardea ponticeriana*, Gmelin, figured in Pl. Enl. 932, stating that according to the scale the bird there represented is only 14½ inches in length.

Sub-fam. HÆMATOPODINÆ.

Bill lengthened, strong, and truncated; tarsus short. Plumage black or pied.

This sub-family contains only one genus.

Gen. HÆMATOPUS, Linnæus.

Char.—Bill straight or slightly bent upwards, very long, robust, compressed, ending in a truncated point; nostrils in the middle of a long and deep oblique cleft; wings moderate or long, nearly reaching the end of the tail, pointed, 1st quill longest; tail moderate, nearly even, of twelve feathers; tarsi short, strong, reticulated; hind toe wanting, anterior toes short, thick, edged with callosities, the outer toe joined at the base to the middle one by a web.

This genus, at first sight, perhaps does not look like a Plover, but in its general structure and habits, and even in the form of its bill (though modified) it is distinctly allied to that family, near which indeed, most Ornithologists class it. Blyth in his Catalogue places it among the *Chionidæ*.

The species feed on various molluscs, worms, and small crustacea.

862. Hæmatopus ostralegus, LINNÆUS.

JERDON, Cat. 320—BLYTH, Cat. 1571—GOULD, Birds of Europe, pl. 300—*Darya gajpaon*, H., *i. e.*, Sea-Longshanks—*Yerri kali ulanka*, Tel.

THE OYSTER-CATCHER.

Descr.—Whole head and neck, upper back, wings, and tail, black; lower back, rump, upper tail-coverts, and lower plumage

from the breast, white; a broad wing-band formed by the greater coverts also white.

Bill orange yellow, dusky anteriorly; irides fine crimson red; eyelids orange, with a small space of the lower eyelid plumed and white; feet dull pinkish-red. Length 16 to 17 inches; wing 10; tail 4; bill at front 4; tarsus 2.

Young birds are less pure black, with pale edges to the feathers; and, after the first moult, they are said to have a white collar all round the neck.

The Oyster-catcher is found both on the East and West coasts of India, most abundant perhaps in the more rocky West coast, and it is only a winter visitant. I have always found it remarkably shy and difficult to procure. It is far from rare near Tellicherry, where I resided for some time.

It inhabits most of the Sea-coasts of Europe, and is said to feed chiefly on molluscs, and to be able to open bivalves with its truncated bill; it feeds also on worms and various sea insects, &c. It nidificates on the ground on shingly beaches by the sea side, or on the banks of rivers, laying four rather large eggs, of a dull greenish-yellow, with dark brown and grey marks and spots. Some American species are recorded as not laying more than two eggs.

Several species are recorded, chiefly from America, one or two from Australia, and one from Africa. Some of the genus are nearly all black, and are separated as *Melanibyx*. One of these is Australian, but is also found in North-eastern Asia according to Pallas. Bonaparte places next this genus the Red-billed Curlew (*Ibidorhynchus Struthersii.*)

The family CHIONIDÆ, Bonap., placed by Gray among the *Rasores*, certainly should be placed not far from the Plovers; and, as we have seen, Blyth even associates with them the Oyster-catchers. It comprises the genera *Thinocoris* and *Attagen*, and the still more unique form, *Chionis*. The two former inhabit the Andes, have the bill short and compressed, somewhat rasorial nares, pointed wings, with long tertiaries, a short, ample, and rounded tail, the tarsus short and reticulated. They have a very rasorial aspect, it must be confessed, especially *Attagen*, but the whole of their character and their mode of flight, show them

to be modified *Grallæ*. Blyth considers that they approximate to the *Pteroclidæ* in appearance and habit. They frequent upland plains and resemble Ptarmigans in their habits. *Thinocoris*, according to Darwin, partakes both of the character of the Snipe and the Quail. *Chionis alba*, the Kelp-pigeon, has a very curious short thick bill, the nostrils concealed by a sort of sheath that covers the base of the bill, and hence it is called the Sheath-bill. It is pure white, lives on the Coasts of Australia and New Zealand, feeding on molluscs, chiefly limpets, and crustacea, and is frequently met with far out at sea.

Fam. GRUIDÆ—Cranes.

Bill short, stout, straight, slightly cleft, somewhat like that of the Bustards; legs scutellated; wings ample; of large size, with pale grey or white plumage, and with a long neck.

The Cranes have usually been placed among the *Cultirostres*, (the Herons and Storks) but their totally different habits, anatomy, and nidification, and their young running from the egg, demand their removal. (Since the above was penned, I have seen the abstract of a paper by Mr. W. K. Parker, read before the Zool. Society, which, I am glad to see, corroborates these views; he states that "the Crane is a gigantic specialized aberrant of the Pressirostral family.") They are externally somewhat allied to the Bustards, whilst their internal anatomy may be said to be more that of Plovers. They are birds of very large size with long necks and legs, feed much on grain, a few also on insects, frogs, and fish. The head of several is more or less devoid of feathers, others are beautifully crested. Their figure is elegant, and their motions graceful; they fly with outstretched necks. They have a very loud, fine, trumpet-like call. Many are migratory, and highly gregarious; and they nidificate on the ground.

The sternum is something like that of the Heron, with one rather short fissure; the furcula is anchylosed to the keel. The cæca are highly developed, and the stomach is very muscular. The tracheæ are elongated, enter the ridge of the sternum, and are convoluted within it.

Gen. GRUS, Lin.

Char.—Bill moderately long, straight, somewhat thick; mandibles nearly equal, compressed, with the tip subulate; nostrils apart, placed near the middle of the bill in a broad and deep groove closed posteriorly by membrane; wings long, ample, 3rd quill longest; tail short; tibia much denuded; tarsi lengthened, scutellated in front; toes short, strong; nails blunt; hallux short, raised.

The true Cranes have generally the region about the base of the bill and orbits, and sometimes the whole head, nude. They are birds of very large size, of grey or white plumage, with the tertiaries lengthened and overhanging. They are divided into three genera in Gray's List.

The first is *Antigone*, Reichenbach, distinguished by its huge size, naked and papillose head and neck, and strong, elongated bill.

863. Grus antigone, LINNÆUS.

Ardea, apud LINNÆUS—BLYTH, Cat. 1615—JERDON, Cat. 297—EDWARDS, Birds, pl. 45—G. torquata, VIEILLOT,—G. orientalis, PALLAS—P. E. 865—*Saras*, H., sometimes *Sarhans*—Cyrus Crane of some.

THE SARUS CRANE.

Descr.—Head and neck naked and covered for three or four inches with numerous crimson papillæ, clad with a few scant black hairs, which accumulate into a broad ring on the neck and form a sort of mane down the nape of the neck; ear-coverts white; below this the neck is whitish grey, which gradually passes into the pale blue or French grey, which is the color of the whole plumage, the quills and inner webs of the tail feathers being dusky slaty.

At the breeding season, in the month of April, they assume a pure white collar, immediately below the crimson papillose skin of the neck, which also becomes brighter in colour; and in old birds, the tertiaries and some of the scapulars become white and are lengthened, hanging over gracefully, and exceeding the tail.

Bill pale sea green, brownish at the tip; irides orange red; legs and feet pale rosy red. Length about 52 inches; extent nearly 8 feet; wing 26 inches; tail 9¼; bill at front 6¼; tarsus 12½ to 13; weight 17 or 18 lbs.

The *Sarus* is found throughout the greater part of India and Burmah; is rare South of the Godavery, and also apparently in the Punjab, for Adams states that he did not see it there, but common in Central India, Bengal, and parts of the N. W. Provinces, and still more so in Candeish. It is chiefly found in pairs, occasionally several together.

It feeds less exclusively perhaps on grain than the other Cranes met with in India, and is very generally found not far from water. It breeds on some island or spot nearly surrounded by water, laying two eggs only, of a very pale bluish green colour, with a few reddish spots. The eggs are figured by Blyth in Jardine's Illustrations of Ornitholgy, and he states that it has bred in captivity. The nest is sometimes commenced below water, and is raised some inches above the surface. The young have the head and neck dull ferruginous. The old birds, when sitting, or with their young, are very bold, facing an intruder, be it dog or man, lowering their head and spreading out their large wings in a most formidable looking manner. Its fine trumpet-like call, uttered when alarmed or on the wing, can be heard a couple of miles off. A young Sarus is not bad eating, but old birds are worthless for the table. Some epicures assert the liver to be peculiarly fine. In most parts of the country it is so confiding and fearless in its habits as to preclude the sporstman from shooting it; and in the territories of Holkar it is, if not venerated, esteemed so highly as to be held sacred from the Shikaries, and I have known complaints made against Officers for shooting them.

The next bird is placed by Bonaparte in a section *Leucogeranus* of the genus *Antigone*, distinguished by their white plumage, and having the head and neck only partially nude.

864. **Grus leucogeranus**, Pallas.

Temminck Pl. Col. 467.

THE LARGE WHITE CRANE.

Descr.—Plumage wholly white, quills black; tertiaries lengthened.

Bill and naked skin of the face red; legs red. Length about 4 feet; extent 8 feet.

This fine Crane appears to be a rare winter visitant to several parts of North-Western India. A figure of it is among the drawings of Sir A. Burnes, and it has been observed occasionally by sportsmen in the Punjab, in Rajasthan, and in the interior of the Himalayas. Mountaineer particularly notices 'a large white Crane.' It is an inhabitant of Northern Asia and Japan.

To the same group belongs the beautiful *Grus montignesia*, Bonap., from Mantchouria. *Grus australasiana* of Australia, the "native companion" of settlers, is exceedingly close to *G. antigone*.

The next species is the type of restricted *Grus*, having the beak shorter, high and sloping at the base, straight for its terminal half. It comprises several species from the Old World and Australia, and two from America.

865. **Grus cinerea**, Bechstein.

Blyth, Cat. 1616—Jerdon, Cat. 298—Gould, Birds of Europe, pl. 270—G. antigone, Sykes, Cat. 168—Ardea Grus, Linn.—*Kulang*, H.—*Kallam*, Mahr.—*Kulangi*, Tel.

The Common Crane.

Descr.—Forehead and cheeks nude, with black bristly hairs; crown nude, dull orange red; occiput, throat, and fore part of the neck, of a deep blackish grey; between the eyes, sides of the head and upper part of the neck white, as is the greater part of the back of the neck, but the colour impure and with a reddish tinge; all the upper part of the body and the lower plumage dark ashy blue; quills and greater coverts dull black; secondaries and tertiaries grey, black tipped, the latter narrowing to a point with the barbs of the uppermost feathers disunited, and all arching down and forming an elegant tuft of floating plumes which it is able to erect at pleasure.

Bill glaucous green at the base, blackish green in the middle, the tip dark horny; irides yellowish red, reddish brown in some; legs and feet dull black. Length 3 to 3½ feet; extent 6 feet; wing 21 inches; tail 8; tarsus 8½; bill at front 4. Weight about 12 lbs.

Young birds want the naked patch on the head, the neck is dingy grey without any white, and the colours generally are more dull.

The common Crane of Europe visits India in numerous flocks during the cold weather. In the Deccan and Central India it is generally seen in small flocks of from six or eight to twenty, now and then in much larger numbers, especially in the Punjab and the N. W. Provinces. It feeds chiefly on grain, committing great havoc in the wheat fields, and in rice fields in Bengal, but it also eats shoots of plants and flowers, and occasionally, it is said, insects and reptiles. On one occasion, I found that the flowers of *Carthamus tinctorius* had been the only food partaken of; it is stated in China to devour sweet potatoes. It feeds chiefly in the morning, and rests during the day in some river or tank, returning to the fields for a short time in the afternoon. It has a fine loud trumpet-like call chiefly heard during its flight. It leaves this country early, generally before the end of March, and breeds in Northern Asia and Europe, in marshy ground generally, occasionally it is said, on the roofs of deserted houses. The eggs are two in number, of a greenish colour, with some brownish spots; and Mr. Wolly, in the 1st vol. of the Ibis, has given an interesting account of its nidification. In former years it used to visit England regularly and even to breed there.

This Crane is occasionally hawked at and killed by a good *Bhyri* (*Falco peregrinus*), and gives a fine chase. It is tolerably good eating, though not equal to the next species; it was considered a great delicacy by our ancestors. It inhabits the greater part of Europe, Asia, and Northern Africa, but is replaced in North-eastern Asia and Japan by a species with a longer bill, *G. longirostris*. Other Cranes are *G. vipio*, Pallas, (*leucanchen*, Temm.), and *G. monacha*, Temminck, both from North-eastern Asia and Japan. There are also two species from North America, *Grus canadensis*, and *G. americana*. *Grus carunculata* of Africa is the type of *Laomedontia* of Reichenbach.

Gen. ANTHROPOIDES, Vieillot.

Syn. *Scops*, apud Gray.

Bill shorter than in *Grus*, depressed at the base, and slightly swollen at the tip; tarsus lengthened; head and neck densely

feathered; the feathers of the neck and breast lanceolate and hackled. Of smaller size, and the neck less lengthened than in the previous species.

866. Anthropoides Virgo, Linnæus.

Ardea, apud Linnæus—Blyth, Cat. 1617—Jerdon, Cat. 299—La Demoiselle, Buffon Pl. Enl. 241.—*Karkarra*, H., also *Karroncli*—*Karra*, Beng.—*Karkoncha*, Can.,—*Wada-koraka*, Tel.

The Demoiselle Crane.

Descr.—Forehead, face, sides of head, neck, and the lengthened breast plumes, black; a tuft of white decomposed feathers extending backwards and outwards from the eye; the general plumage fine purplish grey; quills black; the greatly elongated tertiaries and scapulars dusky slaty, drooping.

Bill greenish at the base, yellowish in the middle, and inclining to pink at the tip; irides fine ruby red; legs black. Length about 30 inches; extent 5 feet; wing 19 inches; tail 6½ to 7; bill at front $2\frac{3}{10}$; tarsus 6½. Weight about 6lbs.

Young birds have no black, and want the white ear-tuft.

This beautiful Crane is found throughout the greater part of India, is more rare in the extreme South, and is never seen in Malabar, nor in Lower Bengal: one writer says that it is never met with below Dinapore. It is a cold weather visitor generally, only coming in late in October, and its arrival, like that of the last, is hailed with joy as a sure sign that the cold weather is indeed come. It associates in numerous flocks, from fifty to five hundred, and chiefly frequents the vicinity of rivers, as it invariably, according to my own experience, betakes itself during the heat of the day to rivers to drink and rest, and never to tanks or jheels, as the Sarus and common Crane do. One writer however states that he has seen and shot them in a jheel. It is very destructive to grain fields, especially to wheat in Central India, and to chenna (*Cicer arietinum*) in the Deccan. They fly with great regularity, either in a long continuous line, or in a double wedge-shaped line, and then utter their fine clanging note frequently.

The Demoiselle Crane breeds on the ground in Northern Asia, laying two olive grey eggs speckled with rufous. The

male bird watches whilst the female is incubating, and fights boldly if attacked. They are said to dance among themselves, and will often seize hold of any small article, toss it up in the air, and catch it as it descends. It is also stated that they occasionally eat mice, snakes, &c., lifting them up and dashing them down on the ground till quite dead.

The *Karkarra* makes a fine flight with a *Bhyri*, occasionally two or three miles; it never uses its beak in self-defence, but is very apt to injure the falcon with its sharp inner claw. A well trained Bhyri therefore always strikes this Crane on the back and never on the head. The mate of the stricken quarry often turns and comes to the rescue of its companion. It is shy and difficult to approach when resting, but less so when feeding, and it is well worth a little trouble, as it is one of the best birds in India for the table, and the praises of "roast coolen" are sung by many sportsmen. The name *Kllung*, transformed into *Coolen*, is wrongly applied to this species by many sporting writers, it being always used for the common Crane by falconers and the best shikarees. The name *Karkarra* appears to be nearly the same word as is used by the Mongols of Central Asia according to Pallas, *viz.*, *Karkarror*, and is evidently an imitation of its call. This species is common in Northern Africa, and is occasionally killed in the South of Europe.

The Stanley Crane, *Grus paradisea* of Africa, is placed in this genus by Gray; but Bonaparte separates it as *Tetrapteryx*. Another beautiful species is the crowned Crane, *Balearica pavonina* of Northern Africa, a rare visitant to the South of Europe; and a second species of the same group occurs in Southern Africa, *B. regulorum*.

Near the Cranes perhaps should be placed those remarkable birds, the *Agami* or Trumpeter-birds of South America, forming the family *Psophiidæ* of Bonaparte. In these birds the bill is shorter than in the true Cranes, the head and neck covered with down, and the orbits nude. The best known species is *Psophia crepitans*, Lin., about the size of a small Turkey, the plumage black, glossed with purple below, and with an ashy mantle; the sternum narrow throughout, with a low keel, and entirely without

any notch, or rather, perhaps, the outer margin is deficient. The trachea is elongated, and descends under the skin of the abdomen, which causes the voice, which is a low deep sound, to appear as if it came from the abdomen. It lives in the woods, feeds on fruit and grains, and soon becomes domesticated. It flies badly, but runs well, and nestles on the ground at the foot of a tree. Blyth states that its port is that of a Struthious bird, and he is inclined to rank it, not far from the *Tinamidæ*, as a distinct group. If this view is correct, it will be another link joining the Rasorial birds to the *Grallatores*. Two additional species have lately been described.

Tribe LONGIROSTRES, Cuvier.

Bill more or less lengthened, slender, and feeble; wings usually long and pointed; tail short; tarsus moderately long; toes moderate, the exterior one generally joined to the middle toe by a short web, and the hallux short and raised, absent in a very few.

This tribe contains a number of generally small wading birds, classed by Linnæus in *Scolopax* and *Tringa*, and many closely resembling each other in colour and conformation. Most have a double moult, and the change of plumage is considerable in many. All are migratory, and several associate in winter in large flocks; others are more or less solitary. They feed on small molluscs, worms, and crustacea, for which they bore in the soft mud of rivers, lakes, or marshes; and the bill of some is peculiarly sensitive at the tip. They nidificate on the ground, laying usually four somewhat conical eggs, colored something like those of the Plovers, and the young run as soon as they leave the shell.

The sternum has a double emargination, the outermost the largest, and the keel is high; the bony orbit is very deficient. The stomach is a muscular gizzard, and the intestines are long, with small or moderate cæca. The females are, in many cases, larger than the males; in a very few, the males are much larger than the females, and, in these cases, are polygamous.

They are very closely related to the Plovers in structure and internal anatomy, but differ in their more lengthened bill, slender form, more aquatic habits, and mode of coloration.

The *Longirostres* comprise one large family, the *Scolopacidæ*, and a very small group, differing from them only in external conformation and colour, the *Himantopidæ;* these last may be said to bear the same relation to the rest of the tribe, that the Sea-plovers (*Hæmatopodidæ*) do to the other Plovers, and to which, indeed, these birds have a general similarity of colour.

Fam. SCOLOPACIDÆ.

Bill typically long, slender, in many somewhat soft towards the tip, in others hard throughout; wings lengthened, as are the tertials; tail short; tarsus moderately long; toes slightly united by a very short web. Plumage brown, of various shades above, white, more or less tinged brown or ashy beneath.

The Snipes and Sand-pipers form a continued series, graduating into each other, with various modifications of the bill, as to length, strength, hardness, and form. The bill is short in some, as in *Tringa;* curved in the Curlews; somewhat turned upwards in *Limosa* and *Terekia*; soft in the Snipes, moderately hard in *Totanus*. They may be divided, according to these modifications, (and in one case from the structure of the feet), into *Scolopacinæ*, True Snipes; *Limosinæ*, Godwits; *Numeninæ*, Curlews; *Tringinæ*, Stints; *Phalaropinæ*, and *Totaninæ*, Phalaropes; Sand-pipers.

Sub-fam. SCOLOPACINÆ, Snipes.

Bill long, straight, rather soft, swollen at the tip, which is gently bent over the lower mandible; tarsus rather short; tail varying in the number of feathers.

The Snipes have the richest plumage of the family, the dorsals and scapular feathers being often streaked with black and yellow. Their bills are highly sensitive and soft at the tip, and in drying shrivel up so as to appear punctured. They feed on worms and soft larvæ, are chiefly nocturnal in their habits, and have large eyes set far backwards, giving them a peculiar physiognomy. They mostly affect concealment, and some of them even frequent woods.

Gen. SCOLOPAX, Linn. (as restricted.)

Syn. *Rusticola*, Vieillot.

Char.—Bill long, thin, more or less rounded, of soft texture, swollen at the tip, and obtuse; upper mandible channeled for the

greater part of its length, slightly bent downwards at the tip; lower mandible channeled only to the middle; nostrils basal, longitudinal; wings moderately long, very pointed, 1st quill longest; tail short, of twelve soft uniform feathers; tibia plumed to the joint; toes free to the base; tarsus short, stout; hind toe short.

This genus, now restricted to the true Wood-cocks, differs from the Snipe chiefly by the tibia being feathered to the knee. It comprises birds of larger size and stouter make than the Snipes, and perfectly sylvan in their habits, as the English name implies. The humerus is stated to be without air-cells.

867. **Scolopax rusticola**, LINNÆUS.

JERDON, Cat. 335—BLYTH, Cat. 1605—S. indicus, HODGSON.—GOULD, Birds of Europe, pl. 319—*Sim-titar*, or *Tutatar*, H. of some.—*Sim-Kukra* in Kumaon.

THE WOOD-COCK.

Descr.—Forehead and crown ash-grey, tinged rufous; a dusky streak from gape to eyes; occiput, with four broad transverse bars of blackish brown; the rest of the upper part variegated with chesnut brown, ochre yellow and ash-grey, with zigzag lines and irregular spots of black; throat white; rest of under parts yellowish white, passing into rufous on the breast and forepart of neck with cross wavy bars of dusky brown; quills barred ferruginous and black; tail black, the outer webs edged rufous, tips ash-grey above, silvery white beneath; bill fleshy-grey; legs livid; irides dark brown.

Length 14 to nearly 16 inches; wing 8 to 8¼; tail 3¼. Bill (front) 3 to $3\frac{2}{10}$; tarsus 1½ to $1\frac{8}{10}$; extent of wing 24 to 26 inches; mid-toe 1¾. Average weight 9 to 10 ounces, varies from 7 to 14 ounces and more. The female is larger, with the colours more dull. The wings reach to about 1¼ inches from the end of the tail.

The Wood-cock is a winter visitant to the more elevated wooded regions of India, the Himalayas, the Neilgherries, the Pulneys, Shervaroys, Coorg, and doubtless all the higher ranges of Southern India. During its periodical migrations north and south, individuals are occasionally killed in various parts of the country.

Several were procured in the Calcutta market by Mr. Blyth; I have heard of its having been at least once obtained in the Madras market; and various other instances of its having been procured in different parts of the country have come to my knowledge, viz., at Chittagong, Berhampore, Noacolly, Tipperah, Dacca, Masulipatam, &c. The Wood-cock is late in arriving, generally not appearing before the middle of October and usually later; it leaves in February. It frequents damp woods, especially if there is a stream running through, or boggy and swampy spots either in the wood or just at the edge, and the holes made by its bill when probing the soft soil for worms may often be noticed, if carefully looked for. On the Himalayas, in general, it is difficult to procure, owing to the extent of the woods and the steepness of the ground; but on the Neilgherries and other hill ranges of Southern India, the woods are small, well defined, and easily beaten by men and dogs, and Wood-cock shooting is a favorite pastime with sportsmen. I have killed eight in a forenoon, and have known 16 and 20 killed by two or three guns. In Coorg, where the woods are very extensive, the sportsman walks up some likely-looking wet nullah, with one or two men on each side, and gets a snap shot now and then. Mountaineer states that they breed in the hills near the snows, in considerable numbers. At this season they are seen towards dusk, about the open glades and borders of the forest on the higher ridges, flying rather high in the air, in various directions, and uttering a loud wailing cry. Major Walter Sherwill observed the same in the interior of Sikim.

The only other true Wood-cocks are *S. saturata*, Horsfield, from Java; and *S. minor*, Gmelin, (*Americana*, Audub.) separated by Bonaparte as *Rusticola*.

Gen. GALLINAGO, Stephens.

Char.—Tibia bare for a small space above the joint; tail with from 16 to 28 feathers, the outer ones often narrowed; otherwise as in *Scolopax*.

This genus comprises the various Snipes, which differ considerably in the form and structure of the tail, and also slightly in the wings; they have been considerably sub-divided by Bonaparte.

1st. Of rather large size, wings broad, full, and soft; tail of 16 or 18 feathers; the laterals slightly narrowed, Gen. *Nemoricola*, Hodgson and Bonap.

868. **Gallinago nemoricola**, Hodgson.

Jerdon, Cat. 336—Blyth, Cat. 1606—Jerdon, Ill. Ind. Orn. pl. 9—Nemoricola nipalensis, Hodgson.

The Wood Snipe.

Descr.—Top of the head black, with rufous-yellow longish markings; upper part of back black, the feathers margined with pale rufous-yellow, and often smeared bluish; scapulars the same, some of them with zig-zag markings; long dorsal plumes black with zig-zag marks of rufous grey, as are most of the wing-coverts; winglet and primary-coverts dusky-black, faintly edged whitish; quills dusky; lower back and upper tail-coverts barred reddish and dusky; tail with the central feathers black at the base, chesnut with dusky bars towards the tip; laterals dusky with whitish bars; beneath, the chin white, the sides of the neck ashy, smeared with buff and blackish, breast ashy, smeared with buff and obscurely barred; the rest of the lower plumage, with the thigh-coverts, whitish with numerous dusky bars; lower tail-coverts rufescent, with dusky marks, and the under wing-coverts barred black and whitish.

Bill reddish brown, paler at the base beneath; irides dusky brown; legs plumbeous-green. Length 12½ to 13 inches; extent 18; wing 5¾; tail 2½; bill at front 2⅝; tarsus 1¾; middle toe 1$\frac{9}{16}$. Average weight 5¼ to 7 ozs.

This solitary Snipe or Wood-snipe is found in the Himalayas, the Neilgherries, Coorg, and occasionally in Wynaad and other elevated regions of Southern India and Ceylon; it is also said to occur in considerable numbers in the Saharunpoor district, below Hurdwar, and generally in the extensive swamps at the foot of the Himalayas. It frequents the edges of woods near swamps, and patches of brushwood in swampy ground. It is by no means either common or abundant any where, and on the Neilgherries, but few couples are shot in general in one season. It flies heavily, and having a large expanse of wing is not

unfrequently taken for a Wood-cock. One from the Neilgherries is recorded in the *Bengal Sporting Magazine* for 1833 as having weighed 13¼ oz. Was it not a Woodcock?

2nd. Of large or moderate size; the tail with from 20 to 28 feathers; the laterals (five to ten on each side) highly attenuated and stiff; in some cases increasing gradually in width. Legs and feet slightly smaller. Gen. *Spilura*, Bonap.

869. Gallinago solitaria, Hodgson.

J. A. S. VI. 491.—Blyth, Cat. 1607.

The Himalayan Solitary Snipe.

Descr.—Head above brown, with pale mesial and superciliary lines; a dark band from the base of the bill gradually lost in the ear-coverts; upper plumage much as in the common Snipe, but the whole of the feathers more spotted and barred with rufous; a conspicuous pale buff stripe along the scapulars and inner edge of the wing; primaries brown, with a narrow pale edging externally, and the innermost tipped with white; secondaries and tertiaries broadly barred with dark brown and pale rufous; tail deep black at the base with a broad subterminal band of bright ashy-rufous, tipped brown, and the extreme tip pale; outermost rectrices finely barred; breast olive brown with white dashes, or white and brown bars, passing into white on the abdomen and vent, with some olivaceous bands on the upper belly and flanks, and the sides of the vent and under tail-coverts whitish.

Bill reddish brown; irides dark; feet greenish yellow. Length 12½ inches; extent 20; wing 6¼; tail 3⅛; bill at front 2¾; tarsus 1⅛; middle-toe 1⅛. Weight 6½ ozs.

The Himalayan Solitary Snipe has hitherto only been found in the Himalayas, and no details of its peculiar haunts are recorded. It inhabits thin forests, near swampy ground, and in winter has been killed at from 3,000 to 6,000 feet of elevation. I am not aware if it occurs elsewhere, but it will most probably be found in summer in Thibet and Central Asia; indeed Bonaparte states that there is a species from Japan which scarcely differs, having 20 to 24 rectrices, the outer ones narrow; it is very probably Swinhoe's *Gallin. megala*, from China.

870. Gallinago stenura, Temminck.

Scolopax, apud Temminck.—Blyth, Cat. 1609—S. gallinago apud Jerdon, Cat. 337 (in part)—S. heterura, and S. biclavus, Hodgson—S. Horsfieldii, Gray—Hardwicke, Ill. Ind. Zool. 2, pl. 54.—

The Pin-tailed Snipe.

Descr.—Very similar to the Common Snipe in colour; but the under wing-coverts and axillaries richly barred with dusky and white.

Of slightly smaller size than the Common Snipe; length 9 to 10 inches; wing 5½; bill barely (in general) 2½ inches; tail 2 to 2¼; tarsus and feet slightly shorter.

The Pin-tailed Snipe resembles the Common Snipe so closely that it is very seldom discriminated by sportsmen, and often passed over by the Naturalist. It can, however, be recognised at once by the richly barred lower wing-coverts, by its shorter beak, and most conspicuously by its remarkable tail, the lateral feathers of which are very narrow, rigid, and pointed.

I regret that I have no information of its habits, or of its times of appearance and departure, as distinguished from the Common Snipe.

3rd. With from 14 to 16 tail-feathers, of nearly uniform width; restricted *Gallinago*, Bonap.

871. Gallinago scolopacinus, Bonap.

Blyth, Cat. 1610—S. gallinago, Linn.—Sykes, Cat. 197—Jerdon, Cat, 337 (in part)—S. uniclavus, Hodgson—Gould, Birds of Europe, pl. 321-2,—S. burka, Latham and Bonaparte—*Jharka Bharak*, *H.*—(*Chaha*, *Chahar*, H. in various parts*)—*Soorkhab*, of some Shikaries, *i. e.*, the Sucker of water—*Muku puredi*, Tel., *i. e.*, the long-billed *Turnix*—*More-ulan*, Tam.—*Chegga*, Beng.

The Common Snipe.

Descr.—Crown black, divided longitudinally by a yellowish white line; a dusky brown eyestreak, and a yellowish superciliary

* According to Buchanan *Chaha* is applied to various small Waders, but not correctly to the Snipe.

one; back and scapulars velvet black, crossed with chesnut brown bars, and with longitudinal streaks of ochre yellow; wing-coverts dusky brown, edged with reddish white; quills blackish; chin and throat white; cheeks, neck, and breast above mottled black and ferruginous; flanks barred white and dusky; the lower part of the breast and abdomen pure white; tail black, with the terminal third red-brown, barred black and tipped whitish; lower wing-coverts white, very faintly barred.

Bill reddish brown, paler at the base; irides deep brown; legs greyish green. Length 11 to 12 inches; extent 17 to 18; wing 5 to 5⅜, about 1 or 1¼ inches shorter than tail; tail 2½; bill at front 2¾ to 3; tarsus 1¼; middle toe 1¼. Weight 3¾ to 5 ozs.

Both this and the last species of Snipe are very abundant in India during the cold weather, and are not, in general, discriminated by sportsmen. Snipe arrive in the North of India in small numbers early in August, but not in any quantity till the end of September and October. A few are generally found in the Calcutta market early in August, and in the Madras market by the 25th of the same month; the last birds do not leave before the first week of May. In Upper Burmah, where I noticed the very early appearance of the Common Swallow, Snipe come in small numbers towards the middle or latter end of July; but I very much doubt their breeding there, or in the marshes of Bengal, as Adams states that they do. They frequent marshes, inundated paddy fields, rice stubble fields, edges of jheels, tanks, and river courses, feeding, chiefly at night, on worms and various aquatic insects. Their pursuit is a favorite sport throughout India, and vast numbers are occasionally killed. I have heard of 100 couples having been killed to one gun in the South of India; and sixty or seventy brace is no very uncommon bag for a first-rate shot in some parts of the country. Snipe always rise with a piping call, and fly against the wind; occasionally they alight on bare or ploughed land, and not unfrequently take refuge in some neighbouring low jungle.

Snipe breed in Northern Europe and Asia, laying four eggs yellowish white, spotted with brown, chiefly at the large end. The peculiar humming noise made by some Snipe during their flight

at the breeding season, was shown by Meves of Stockholm to depend on the outer tail-feathers; and the noise can be imitated by drawing these feathers attached to a wire rapidly through the air. The particular sound varies in each species according to the structure of the tail.

4th. Tail of 12 uniform feathers; of small size. *Lymnocryptes*, Kaup.

872. Gallinago gallinula, Linnæus.

Sykes, Cat. 198—Jerdon, Cat. 338—Blyth, Cat. 1611—Gould, Birds of Europe, pl. 319.

The Jack Snipe.

Descr.—Crown divided by a black band slightly edged with reddish brown, extending from the forehead to the nape; beneath this and parallel to it are two streaks of yellowish white, separated by another of black; a dusky line between the gape and the eye; back and scapulars black, glossed with green, and with purple reflections; the scapulars with the outer webs creamy yellow, forming two conspicuous longitudinal bands extending from the shoulders to the tail; quills dusky; wing-coverts black, edged with pale brown and white; throat white; neck in front and upper breast pale yellow brown tinged with ashy, and with dark longitudinal spots; lower breast and belly pure white; tail dusky, edged with pale ferruginous.

Bill bluish at the base, black towards the tip; irides deep brown; legs and feet greenish grey. Length 8½ inches; extent 14; wing 4¼; tail not quite 2; bill at front 1¾; tarsus 1. Weight 1¾ ozs.

The Jack Snipe is generally diffused throughout India, preferring thicker coverts than the Common Snipe, lying very close, and difficult to flush. Now and then considerable numbers will be met with; in other places it is rarely seen. It makes its appearance later than the Common Snipe, and departs earlier, breeding in the Northern parts of Europe and Asia.

Various other Snipes are found all over the world. A group from South America is separated by Bonaparte as *Xylocola*.

Gen. RHYNCHÆA, Cuvier.

Char.—Bill shorter than in *Gallinago*, slightly curved downwards at the tip; wings rather short, broad, slightly rounded, beautifully ocellated, 2nd quill longest, 1st and 3rd sub-equal; tail of 14 or 16 feathers, slightly rounded, short; tarsus long; tibia much denuded.

In this genus the females are not only larger than the males but they are also much more richly colored. It contains three very closely allied species. Blyth considers it to have some affinities for *Eurypyga*, a South American bird of rather large size with ocellated wings, usually placed among the Herons.

873. Rhynchæa bengalensis, LINNÆUS.

Scolopax, apud LINNÆUS—SYKES, Cat. 199—JERDON, Cat. 334—BLYTH, Cat. 1612—R. capensis, LINN.—R. picta, GRAY—R. orientalis, HORSFIELD—HARDWICKE, Ill. Ind. Zool.

THE PAINTED SNIPE.

Descr.—Upper plumage more or less olivaceous, the feathers finely marked with zig-zag dark lines, and the scapulars and inner wing-coverts with broad bars of black, edged with white; a median pale buff line on the head, and another behind and round the eye; scapulars with a pale buff stripe as in the Snipe; wing-coverts mottled and barred with pale olive and buff; quills olivaceous grey, with dark, narrow, cross lines, blackish towards the base on the outer web, and with a series of five or more buff ocelli on the outer web; the inner web with white cross bands alternating with the ocelli, and gradually changing to buff on the tertials; tail olivaceous grey, with four or five rows of buff ocelli on both webs, and tipped with buff; chin whitish; neck, throat, and breast olivaceous brown, with whitish spots or bars; the lower parts from the breast, white, passing on the sides of the breast towards the shoulder, and becoming continuous with the pale scapulary stripe.

The female is darker and plainer coloured above; the wing-coverts and tertials dark olive with narrow black cross lines, the outermost tertiaries white, forming a conspicuous white stripe; lores, sides of the face, and whole neck, deep ferruginous chesnut, gradually changing on the breast into dark olive, almost black

beneath, this is bordered on the sides (as in the male) by a pure white line passing up to the scapular region; lower part white, a dark band on the flanks bordering the white ascending line posteriorly.

Bill reddish brown; irides deep brown; legs greenish. Length of the female 9½ inches; wing 5⅜; tail nearly 2; bill at front 1⅜; tarsus 1¾; mid-toe 1⅝. The male is a little smaller; length 9; wing 5¼.

The African species is generally considered distinct, and is stated to differ in its narrower quills and some slight variations in the coloring of the wings, tail, &c.; I can see no such difference however in a Cape specimen in the Museum of the Asiatic Society, and I note that Gurney in a late paper in the 'Ibis,' pronounces them to be identical. *R. australis*, Gould, from Australia, is also very closely allied, but the female (only) possesses a peculiar conformation of the trachea, which is wanting in the Indian bird, this organ passing down between the skin and the muscles for the whole length of the body, and making four distinct convolutions before entering the lungs. It has shorter toes also than the Indian species. A species from South America, *R. semicollaris*, V. is very distinct.

The Painted Snipe is a permanent resident in some parts of India, breeding in June and July in thick marshy ground, and laying four eggs which are greenish with large brown blotches and very large for the size of the bird. It wanders about a good deal according to the season, and many will be found in paddy fields, in the south of India, in October and November, leading the observer to conclude that they are as migratory as the true Snipe. I have found them breeding in Malabar, the Deccan, and Bengal; after the young are fully grown, they disperse over the country.

The Painted Snipe flies heavily and but a short distance, and is difficult to flush a second time in thick grass. The flesh is very inferior to that of the Snipe; and, indeed, is pronounced 'nasty' by some late writer. Blyth remarks that when surprised, it has the habit of spreading out its wings and tail, and so forming a sort of radiated disk which shows off its spotted markings, menacing the while with a hissing sound and contracted neck, and then suddenly darting off. The young and the eggs are figured in Jardine's

contributions to Ornithology. It is found throughout India, Ceylon, Burmah, parts of Malayana, and Southern China, and also throughout Africa.

The remaining Longirostres are mostly diurnal in their habits.

Sub-fam. LIMOSINÆ, GODWITS.

Bill much lengthened, soft at the tip, straight or slightly turned upwards; mostly of somewhat large size; plumage plain; a distinct web between the outer toes.

The Godwits approach the Snipes in the form of their bill and the softness of its tip, but differ much in coloration, wanting their rich plumage. In this respect they more closely resemble the *Tringæ*, having a vernal change to rufous as in many of that group, from which they differ chiefly by their longer bills, and slightly webbed feet. They also frequent open ground, not affecting concealment at all; are diurnal, and the eye is less remote from the bill. The first has almost the bill of *Scolopax*, and has usually been called a Snipe.

Gen. MACRORAMPHUS, Leach.

Char.—Bill very long, straight, higher than wide, dilated at the tip and reticulated like that of *Gallinago;* lower part of the tibia bare; middle toe joined by web to the outer one, and partially also to the inner one; wings long, reaching to the end of the tail, 1st and 2nd quills longest; scapulars long; tail moderate. Plumage between that of *Tringa* and *Numenius*.

This genus differs from *Gallinago* by the partially webbed feet, longer legs and plumage. It forms a complete transition between the *Scolopacinæ* and the *Limosinæ*, and is generally classed with the former, but its plumage and diurnal habits are those of the Godwits or Curlews. The Indian species differs slightly from the American form by having the inner toe connected to the middle one by a web nearly as large as that of the outer toe, and has been named *Pseudoscolopax* by Blyth, *Micropalma* by Verreaux.

874. **Macrorhamphus semipalmatus,** JERDON.

BLYTH, J. A. S. XVII. 252—BLYTH, Cat. 1604—Micropalma Taeksanowskii, VERREAUX, Mag. Zool. 1860, pl. 14—Macrorhamphus griseus, var. A., BONAPARTE.

The Snipe-billed Godwit.

Descr.—In winter plumage, ashy-brown above, with whitish grey margins to the feathers; crown and lores dusky, the feathers but slightly margined paler, and divided apart by a whitish supercilium; throat, neck, and breast, having each feather somewhat indistinctly pencilled with a zig-zag sub-terminal dusky marking on a dull white ground, increasing to three or four dusky bars on those of the flanks and on the lower tail-coverts; belly and vent white; rump and upper tail-coverts white, banded with dusky-black; tail feathers also banded with dusky-black, the dark bars being broader than the white ground; in the uropygials or middle pair of tail-feathers, the white disappears on the inner web, and is reduced to a series of spots on the outer; the primaries and their coverts, and the winglet, are dusky; the shorter primaries, to a partial extent, and the secondaries, and their coverts are edged with white; the first primary a little exceeds the second in length, and has the usual stout and white stem; under surface of wing chiefly white, except along its anterior borders.

Bill dusky, carneous towards the base of the lower mandible; irides dark brown; legs plumbeous green. Length 13 inches; extent 20; wing $6\frac{1}{2}$; tail $2\frac{1}{4}$; bill at front $2\frac{7}{8}$; tarsus $1\frac{3}{4}$; middle toe $1\frac{1}{2}$.

This bird appears to be a rare winter visitant to the Coasts of India. I procured one specimen in the Madras market; Mr. Blyth some years subsequently got another at Calcutta, and there is no other record of its occurrence in India. It has lately been obtained in its breeding plumage in Northern Asia, and described and figured in the *Mag. de Zool.* as new, by M. Verreaux. In this state it is rufous, the wings brown, edged with white, and the tail banded black and white. It was stated not to affect concealment, and the male is said to have the neck dilated. It probably is, like *M. griseus*, chiefly a sea-coast bird, and may be procured hereafter more abundantly.

M. griseus of Europe and America occurs in the latter country in vast numbers, frequents the sand-banks and mud-banks, at low water, and has a loud and shrill whistle.

Gen. LIMOSA, Brisson.

Char.—Bill very long, slender, soft, straight or slightly subrecurved at the tip, cylindrical at the base, obtuse at the point; nostrils basal; wings moderately long, the 1st quill longest; tail short, even; tibia bare for a considerable extent; tarsus long, slender, scutellate in front; feet with the middle toe very long; a web between the outer and middle toes; hind toe short; nail of middle toe dilated internally, with a cutting or finely toothed edge.

875. **Limosa ægocephala**, LINNÆUS.

Scolopax, apud LINNÆUS—L. melanura, LEISLER—L. melanuroides, GOULD—L. leucophæa, apud JERDON, Cat. 339 also 340 —BLYTH, Cat. 1589.—GOULD, Birds of Europe, pl.—*Gairiya*, H., sometimes *Burra çhaha*—*Jaurali*, Beng.—*Tondu ulanka*, Tel.

THE SMALL GODWIT.

Descr.—Winter plumage; all the upper parts uniform ashy brown, with the shafts of the feathers of a somewhat deeper tint; superciliary stripe, and rump white; quills dusky, the basal part of some of the primaries white; greater wing-coverts ashy-grey, broadly edged with white; tail white at the base, the terminal two-thirds black; the two middle feathers tipped with white; beneath, the throat, neck, breast, and flanks greyish white; the abdomen and under tail-coverts white.

Bill dull orange-reddish at the base, dusky at the tip; irides dark brown; legs dusky greyish green. Length from 17 to 21 inches; wing 8 to 9; tail $2\frac{3}{4}$ to $3\frac{1}{4}$; bill at front $3\frac{1}{2}$ to 5; tarsus $2\frac{1}{2}$ to 4.

In summer the head becomes black, the back and scapulars black, edged and tipped with ferruginous, and the lower parts bright ferruginous, the middle of the abdomen alone being white. The bill becomes bright orange at the base, and the legs black. Young birds have the feathers edged with reddish, and the tail tipped with white.

This Godwit is found throughout India during the cold weather, generally in large flocks at the edge of water. It is

excellent eating. It varies very much in size, and in the length of the bill, the female being much larger than the male. It breeds in Northern Europe and Asia. Pallas remarks that in summer it is very clamorous, having a whistling call something like the hinny of a foal.

Other Godwits are *L. lapponica*, L., the large Godwit of Europe, stated to have occurred in Nepal; two or three species are recorded from Australia and New Zealand, and two from America; all very closely related to each other.

Gen. TEREKIA, Bonaparte.

Syn. *Fedoa*, Stephens—*Xennas*, Kaup.—*Limicola*, Vieillot.

Char.—Bill very long, slender, recurved; tarsus rather short; feet with the front toes joined by a web, narrow and short between the inner and mid-toes. Of small size.

This genus is united by some Ornithologists to *Limosa*, but seems distinct enough in form to allow of its separation: it tends towards the *Totaninæ*.

876. **Terekia cinerea**, GMELIN.

Scolopax, apud GMELIN—BLYTH, Cat. 1587—Scol. terek, LATHAM—Limosa terek, JERDON, Cat. 341—Totanus Javanicus, HORSFIELD—Lim. recurvirostra, PALLAS—Limicola indiana, VIEILLOT—GOULD, Birds of Europe, pl. 307.

THE AVOSET SANDPIPER.

Descr.—Upper plumage bluish-ashy, the stems of the feathers dark, with some broadish dark streaks; forehead and cheeks white, with ashy striæ; shoulder of wings, edge of wing, and quills blackish brown, the 1st primary with a white stem; secondaries tipped with white; tail ashy, with the lateral feathers paler and bordered with white; throat whitish; neck in front and top of breast pale ashy, with streaks of reddish brown; lower breast, belly, and under tail-coverts white.

Bill orange-yellow at the base, with a dusky tip; irides brown; legs pale orange. Length nearly 9 inches; extent 16½; wing 5; tail 2; bill at front $1\frac{8}{10}$; tarsus $1\frac{1}{10}$; mid-toe nearly 1.

This neat plumaged little Sandpiper is not very abundant in the South of India, but is met with more frequently towards the North; it frequents the shores of seas, back waters, tanks and rivers, in small flocks. In summer plumage the scapulars become black, edged with brown. It breeds in Northern Asia, laying four pale olive-yellow eggs with brown spots. It is extensively distributed over Europe, and Asia to Australia.

Bonaparte places next *Terekia*, *Anarhynchus frontalis*, Q. and G., a very curious small bird with a short slightly up-turned bill; but, as previously noticed, I am inclined, (simply however, from inspection of a drawing,) to refer this bird to the group of Plovers comprising the Tumstone, *vide* page 656.

Sub-fam. NUMENINÆ, Curlews.

Bill very long, curved downwards.

The Curlews differ from the Godwits, and also from the *Tringinæ*, in their curved beaks, and the summer plumage not varying from the winter garb.

Gen. NUMENIUS, Linnæus.

Char.—Bill very long, moderately slender, curved, almost round; upper mandible channeled, the tip hard, obtuse, slightly produced beyond the lower; nostrils basal, linear, apert; wings moderately long, the 1st quill longest; tail short, even, or slightly rounded; tarsus moderately long, scutate inferiorly; anterior toes short, basally connected by web, and bordered by a narrow membrane; hind toe short, with the nail rudimentary.

877. **Numenius arquata,** LINNÆUS.

JERDON, Cat. 357—BLYTH, Cat. 1590—GOULD, Birds of Europe, pl.—*Goar* or *Goungh*, H.—*Choppa*, Beng.—also *Sada kastachura*, Beng.

THE CURLEW.

Descr.—Head, neck, and breast pale ashy, tinged with rufous, the shafts and middle of the feathers dusky; upper back and

scapulars blackish brown, the feathers broadly edged with rufous brown; lower back white, with dusky spots; tail yellowish white, with transverse brown bars; abdomen white with dusky spots.

Bill dusky brown above, fleshy below; irides dark brown; legs and feet pale bluish grey. Length varies according to sex from 21 to 26 inches; extent 34 to 38; wing 11 to 12¼; tail 4½; bill at front 4 to 6½ inches; tarsus 3¼.

The Curlew is found throughout India, most abundantly perhaps near the sea coast, but also far inland, frequenting marshes, lakes, and rivers. It is generally seen in small flocks, often alone, but at the times of its arrival or departure sometimes in great numbers. It arrives in September and leaves in March or April. It is a very wary bird, and has a fine wild whistle. It is excellent eating. It breeds in Northern Europe and Asia (spreading in winter into Africa and Southern Asia,) laying four eggs of the usual blotched green colour. The Curlew is stated to perch on trees occasionally in Northern Europe.

An allied, but larger species, is separated by Schlegel as *N. major*; Swinhoe obtained this large race in China, so it may be looked for here. Certainly specimens vary greatly in size and in length of bill.

The next species has been most unnecessarily separated as *Phæopus*, Cuv.

878. **Numenius phæopus**, Linnæus.

Blyth, Cat. 1591—Jerdon, Cat. 358—Gould, Birds of Europe, pl.—*Chota Goungh*, H.

The Whimbrel.

Descr.—Forehead and crown cinereous brown, the latter divided by a longitudinal pale streak; over each eye a broad streak of white mixed with brown; sides of the head, neck, and breast pale ashy with brown streaks; upper back, scapulars, and wing-coverts deep brown, the feathers with pale edgings; lower back white; rump white, barred with ashy brown; tail cinereous brown with dark oblique bars; abdomen and under tail-coverts white, the flanks barred with brown.

Bill dusky, reddish at the base; irides brown; legs dark bluish grey. Length 16 to 18 inches; extent 29; wing 9½ to 10; tail 3¾; bill at front 3 to 3½; tarsus .

The Whimbrel is found throughout India, and is more abundant than the Curlew. It frequents similar localities, and is always found in flocks, in marshy ground, near lakes and rivers, and like the last, is more numerous in the vicinity of the sea-coast than inland. It is excellent eating, perhaps better than the Curlew, and has been called the 'Wood-cock' of Bengal. It has a similar geographical distribution to the Curlew, but breeds further North.

There are many species of Curlew recorded from all parts of the world, very similar in plumage, and some doubtfully distinct as species. One, said to be well marked, *N. tenuirostris*, is stated to have been met with in Burmah.

Gen. IBIDORHYNCHUS, Vigors.

Syn. *Clorhynchus*, Hodgson—*Erolia*, Hodgson.

Char.—Bill long, slender, beak well curved, scarcely dilated at the tip, upper mandible grooved; tomiæ inflexed and denticulated; nostrils wide, linear, basal; wings long, with the 1st quill longest; tertiaries lengthened; tail rather short, even, of 12 feathers; tarsi short, stout; tibia bare for a very small space; anterior toes short; outer toe free or nearly so; hind toe wanting; nails short, obtuse.

This remarkable form is, says Hodgson, 'a curlew with short legs and the feet of a Plover.' Gould remarks that its feet are like those of *Hæmatopus*, and its bill that of an *Ibis*.

879. **Ibidorhynchus Struthersii**, VIGORS.

GOULD, Cent. Him. Birds, pl. 19—BLYTH, Cat. 1577—Erolia (red billed,) HODGSON, J. A. S., IV. 459—Clorhynchus strophiatus, HODGSON, l. c., p. 761.

THE RED-BILLED CURLEW.

Descr.—Whole head, as far as the eyes, black, mixed in some, (query females,) with grey about the base of the bill, and margined with white towards the body; the rest of the plumage olive, with

the nape, wings, and tail bluish-ashy; winglet and primaries slaty-blue; an irregular bar of white across the wings; upper tail-coverts black powdered with ashy; tail-feathers cross-barred with brownish black, and all the feathers, except the two central ones, largely tipped with black, the outermost feather with a white outer-web; chin and throat black, the neck ashy, and a broad gorget of black on the breast edged with white anteriorly; the rest beneath, including the under surface of the wings and under tail-coverts pure white.

Bill deep crimson; irides red; legs blood red. Length 16½ inches; extent nearly 30; wing 9¼; tail 4½; bill 3¾; tarsus 2⅛. Weight 9½ to 10 ozs.

This remarkable bird has only been found in the Himalayas. Hodgson first found it on the banks of sandy streams in Nepal in October, he described it as not being gregarious, and observed its food to consist of minute univalves. I met with it on the banks of the Great Rungeet, in Sikim, occasionally single, generally in small parties of five or six. It runs along the pebbly edge of the river, and is exceedingly wary. Mountaineer mentions that the Red-billed Curlew is found in all large rivers which rise from the snow and have a broad sandy channel; Adams observed it on a river in Ladakh, but by no means common.

Hodgson found the stomach to be small and muscular, and the intestines moderately long, with two long cæca.

Sub-fam. TRINGINÆ, Stints, &c.

Bill short or moderate, soft, and somewhat flexible, occasionally dilated or curved; wings long; tail short; legs moderately short; the toes usually divided to the base, or with a very rudimentary web.

The Stints differ from the Godwits by their shorter bill and legs; and from the Sandpipers by their shorter and softer bills, combined with a greater delicacy of tact, which is equal to that of the Godwits, but less than that of the Snipes. They have also a greater tendency to associate in flocks than many of the *Totaninæ*. They feed in marshes, paddy fields, edges of tanks, rivers, &c., but affect concealment or cover more perhaps than the Sandpipers. They

live on soft insects, worms, larvæ, small crustacea and molluscs. Most of them have a marked change of plumage in summer, becoming darker above and rufous beneath; and in one species the male, which is larger than the female is ornamented with a fine ruff.

Gen. PHILOMACHUS, Mœhring.

Syn. *Machetes*, Cuvier—*Pavoncella*, Leach.

Char.—Bill, wings, and tail as in *Tringa*; tarsus somewhat more lengthened; the outer toe joined to the middle one by a short web.

This form differs structurally from Tringa only in having a web between the outer toe and the middle one; but the males are much larger than the females, assume a rich and very varied coloration in summer, with the addition of a large ruff of long feathers, and fight furiously for the possession of the females.

880. **Philomachus pugnax**, LINNÆUS.

Tringa, apud LINNÆUS—BLYTH, Cat. 1601—GOULD, Birds of Europe, pl. 328—Limosa Hardwickii, GRAY, HARDW. Ill. Ind. Zool. 2 pl. 52, f. 2 (the male in winter dress)—Tot. indicus, GRAY, HARDW. Ill. Ind. Zool. 2 pl. 52, f. 1 (the female in winter dress) —JERDON, Cat. 342 and 343—*Geh-wala*, H.

THE RUFF.

Descr.—In winter plumage, the male has the upper plumage variable, generally rich brown, with black central spots, and reddish or whitish edges, the head and neck usually somewhat paler; the greater-coverts barred black and reddish brown; primaries dusky; tail with the middle feathers barred black and red-brown; the throat, forepart of the neck, and the lower parts pure white, sometimes mottled with blackish; the breast reddish or ashy brown, with or without darker spots.

Bill dusky brown; irides brown; legs fleshy yellow. Length 12 to 13 inches; wing $7\frac{1}{4}$; extent $22\frac{1}{2}$; tail $2\frac{1}{2}$; bill at front $1\frac{5}{10}$; tarsus 2. Weight 6 ounces or rather more.

The female is much smaller, has more of an ashy tint throughout, and the feathers more or less dark-centered.

Length 9½ to 10½ inches; wing 6; tail $2\frac{2}{10}$; tarsus $1\frac{6}{10}$. Weight 3½ to 4 ounces.

In summer plumage the male is richly colored with black, deep rufous, and ashy; the face covered with yellow or reddish papillæ, the ruff composed of strong feathers, richly variegated, and the breast mixed with white and blue-black. The female has no ruff, and is paler than the male.

The Ruff and Reeve are found in large numbers in India during the cold season, sometimes assembling in vast flocks. They are frequently found in grass land and damp meadows at some distance from water; at other times on the edges of tanks. They feed greedily on rice, and are most excellent eating. This bird breeds in Northern and Central Europe and Asia. The males select some particular spot on a rising ground, where, being polygamous, they have regular battles for the possession of the females; they are very quarrelsome and pugnacious at all times.

Between *Philomachus* and *Tringa*, Gray places the genus *Hemipalama*, Bon., formed from *Tringa multistriata* of Lichtenstein; and closely following Tringa, *T. leucoptera*, Gmelin, ranged by Bonaparte under *Prosobonia*, among the Rails.

Gen. TRINGA, Linnæus (as restricted.)

Syn. *Schæniclus*, Mœhring.

Bill moderate or short, soft, flexible, straight, or bent down at the tip which is depressed and obtuse, channeled throughout almost to the tip; wings long with the 1st quill longest; tail short, even; tarsus rather short, scutellate anteriorly; toes free, or barely united by a small web.

The first species has the bill somewhat shorter than the others, and perfectly straight, and has been placed in *Calidris* by Cuvier.

881. **Tringa canutus**, LINNÆUS.

BLYTH, Cat. 1592—GOULD, Birds of Europe, pl. 324.

THE KNOT.

Descr.—Winter plumage uniform ash-grey above, the primaries blackish with white shafts; beneath, white, slightly streaked with grey.

Bill black; irides hazel; legs bluish black. Length 10 inches; wing $6\frac{1}{2}$; tail $2\frac{3}{4}$; bill $1\frac{1}{2}$; tarsus .

In summer the upper plumage becomes very dark-black, edged with reddish brown and white; the head and neck is streaked brown; the greater wing-coverts ashy; the rump and upper tail-coverts white-barred; and the whole lower parts rich chesnut.

The Knot is of rare occurrence in India. I procured one specimen at Madras, which I believe is the only one recorded. It is found throughout the northern portion of both Continents. *Tringa lomatina*, Licht., from Southern Asia, is recorded by Bonaparte as near the Knot, and is perhaps the same; and *Schæniclus magnus*, Gould, the same bird as *Tot. tenuirostris*, Horsfield, according to Blyth (in literis), is closely allied.

The remaining species, *Pelidna*, Cuvier, have the bill somewhat longer, distinctly turned down at the tip, and the toes perfectly free. The first of these has the bill more distinctly arched, and is separated by Kaup as *Ancylocheilus;* it had previously, indeed, been separated by Cuvier as *Falcinellus.*

882. **Tringa subarquata**, Gmelin.

Blyth, Cat. 1594—Jerdon, Cat. 344—Gould, Birds of Europe, pl. 328—T. chinensis, Gray—T. falcinella, Pallas—Erolia varia, Vieillot—Falcinellus Cuvieri, Bonap.

The Curlew Stint.

Descr.—In winter plumage, the face and supercilium white; a brown streak from the gape to the eye; upper part of head, back, scapulars, and wing-coverts, ashy-brown, the shafts of the feathers somewhat darker; feathers of the nape streaked with brown, and edged whitish; upper tail-coverts white; tail ashy-grey, edged with white; throat and beneath pure white; the feathers of the neck in front and of the breast streaked with pale brown.

Bill black; irides brown; legs dusky grey. Length 8 inches; wing 5; tail $1\frac{3}{4}$; bill at front $1\frac{7}{12}$; tarsus $1\frac{1}{6}$.

The Curlew Stint is found throughout India, is rare towards the South, common about Calcutta, and in the North of India gener-

ally. It associates in considerable flocks, and prefers large sand banks or mud banks on the sea-coast, or in large rivers. It has been found throughout the Indian Archipelago, and breeds in the North of Europe and Asia. It is considered most excellent food.

The next species belongs to restricted *Pelidna*, apud Bonap., *Schæniclus*, apud Gray.

883. **Tringa cinclus**, Linnæus.

Blyth, Cat. 1595—Gould, Birds of Europe, pl. 329—T. alpina, Linn.—Scol. salina, Pallas—Numenius variabilis, Bechstein.

The Dunlin.

Descr.—In winter plumage, above, with the lores and cheeks ashy-brown, the shafts of the feathers dark, and those of the upper plumage edged paler; supercilia and sides of the forehead whitish-ashy; lesser and median coverts brown, edged with ashy; quills deep brown, with a pale edging; middle tail feathers dark brown, the laterals ashy and edged with white; throat white; breast whitish-ashy with a few brown streaks; abdomen and under tail-coverts pure white.

Bill black; irides deep brown. Length 7½ inches; wing 4½; tail 1⅞; bill at front 1¼; tarsus 1.

In summer the head is black, the upper plumage much mixed with ferruginous and brown; the abdomen pure black; and the breast white and spotted.

The Dunlin is a somewhat rare visitant to India, and I have not seen it in the South. It is occasionally brought to the Calcutta market. It is an inhabitant of both Continents, breeding in the North.

T. maculata, V. (*pectoralis*, Say,) of N. America, and occasionally killed in Britain, is also placed here.

The next species, of small size, is separated as *Actodromus*, Kaup.

884. **Tringa minuta**, Leisler.

Blyth, Cat. 1597—T. pusilla, Meyer—Jerdon, Cat. 345—Gould, Birds of Europe, pl. 332—T. cinclus, Pallas—*Chota pan-loha*, H.

THE LITTLE STINT.

Descr.—All the upper parts ashy-brown, the shafts dusky; a brown streak from the gape to the eye, and a whitish supercilium; the two central tail-feathers brown, the outer ones ashy-brown, edged with whitish; throat, foreneck, middle of the breast, and all the under parts pure white; the sides of the breast ashy-brown.

Bill black; irides deep brown; legs black. Length 6 inches; wing $3\frac{8}{10}$; tail $1\frac{1}{2}$; bill at front $\frac{7}{10}$; tarsus $\frac{9}{10}$.

In summer the head, and upper parts, with the two central tail-feathers, become black, broadly edged and tipped with rufous brown; and the cheeks, sides of neck, and breast reddish.

The Little Stint is very abundant throughout India in winter, associating in large flocks, and feeding on marshy ground, rice fields, and the edges of tanks and rivers. It is very excellent eating.

This species is found throughout the Old World, breeding chiefly in the North. A nearly allied species is *T. subminuta*, Middendorf, found in Japan and North-Eastern Asia, and in China, and very possibly confounded with the common species, it occurs at all events, in the more Eastern parts of India and Burmah. It is said to differ chiefly by its longer toes.

The following species has been again separated as *Leimonites*, Kaup.

885. **Tringa Temminckii**, LEISLER.

BLYTH, Cat. 1598—JERDON, Cat. 346—SYKES, Cat. 200—GOULD, Birds of Europe, pl. 333—T. pusilla, BECHSTEIN.

THE WHITE-TAILED STINT.

Descr.—In winter plumage, all the upper parts brown, with dusky streaks in the centres of the feathers; the four central tail-feathers ashy-brown, the others whitish, and the two outermost ones pure white; throat white; front of neck and breast ashy-brown; belly and under tail-coverts pure white.

Bill black; irides deep brown. Length 6 to $6\frac{1}{4}$ inches; wing $3\frac{8}{10}$; tail $1\frac{9}{10}$; bill at front $\frac{7}{10}$; tarsus $\frac{15}{20}$.

The White-tailed Stint is less numerous in India than the last species; it has similar habits, and a like geographical distribution.

A few other species of little Stints are recorded from various parts of the world. From the Indian isles, we have *T. albescens*, Temm., (*T. damacensis*, Horsf.; *pusilla*, apud S. Müller); and *S. australis*, Gould, (*T. acuminata*, Horsf.)

The next species has the bill broad and depressed, and is separated as *Limicola*, Kaup; it is perhaps worthy of separation, as it leads towards the next form, *Eurinorhynchus*. There is only one species in this division.

886. **Tringa platyrhyncha**, Temminck.

Gould, Birds of Europe, pl. 331—Blyth, Cat. 1596—T. cloroides, Vieillot—Limicola pygmæa, Kaup—Gray, Ill. Genera of Birds, pl. 152, f. 2.

The Broad-billed Stint.

Descr.—In winter plumage, above ashy-brown, with a rufous tint; cheeks white, spotted with brown; quills brown; tail brown, edged with pale reddish ashy; neck white with brown spots; the rest of the lower parts white, tinged with rufous on the sides of the breast, the flanks, and under tail-coverts.

Bill blackish; irides deep brown; legs dusky. Length 6¼ inches; wing 3⅞; tail 1¾; bill at front 1 1/10; tarsus ⅝.

The bill is rather long, broad, flattened, and slightly bent down at the tip.

In summer, the upper plumage is more or less black, edged with rufous and buffy white, the quills black with white shafts, the breast whitish with black spots and tinged with rufous, the rest of the lower surface white.

The Broad-billed Stint is tolerably common towards the North of India, rare in the South. It perhaps abounds more on the sea-coasts and on tidal rivers than far inland. It has a similar distribution to the other members of this group.

Gen. Eurinorhynchus, Nilsson.

Char.—Bill much depressed, broad, flat, with a ridge in the centre at the base, ending in a flat, somewhat obcordate, expanded

tip which terminates in a minute point slightly turned down; nostrils at the basal end of a moderate groove; feet moderate; toes well cleft, with a very small web between the outer and middle toes. Plumage, wings, and general form, as in *Tringa*.

887. **Eurinorhynchus griseus**, Linnæus.

Platalea, apud Linnæus—Trans. Asiat. Soc. pl.—Blyth, Cat. 1599—E. orientalis, Blyth, Ann. Mag. N. H. 1843—E. griseus, Nilsson—Gray, Ill. Genera of Birds, pl. 152, f. 1.

The Spoon-billed Stint.

Descr.—Ashy-grey above, more or less shaded with brown, and the feathers tipped whitish; the feathers of the head, back of neck, upper back, and wing-coverts dark in the centre with whitish tips; forehead white; upper tail-coverts dark with the shafts white, except at the tip, which is black; tail with the medial feathers dark on the inner web, paler on the outer web, and gradually becoming paler to the outermost feather, which is almost white; quills dark brown with white shafts, lighter on the inner webs, and white at the base for one-third on the outside, and two-thirds of the inner webs of the primaries, and for two-thirds of the inner margin only of the inner web of the secondaries, the rest being dark brown, with a narrow border of white; tertiaries with some of the feathers altogether white on the inner web and tip; lower parts, including the cheeks, entirely snow-white, some of the smaller under-coverts of the wing alone being mottled with ashy.

Bill black; irides deep brown; legs black. Length 6½ inches; extent 12½; wing 3⅞; tail 1½; bill ⅞ to 1; tarsus ⅞.

This very curious little bird has hitherto only been found on the mouths of the Ganges and on the coast of Chittagong and Arrakan. It frequents the mud-banks and sand-banks of the sea shore and tidal rivers, and feeds in company with various small *Tringæ*. It was erroneously described by Linnæus as from Surinam.

Gen. CALIDRIS, Cuvier.

Syn. *Arenaria*, Meyer.

Hind toe wanting, otherwise as in *Tringa;* the web at the base of the toes very small.

The absence of the hind toe has caused some Ornithologists to place this bird among the Plovers.

888. Calidris arenaria, TEMMINCK.

GOULD, Birds of Europe, pl. 335—Charadrius calidris, LINNÆUS —BLYTH, Cat. 1600—Tringa tridactyla, PALLAS.

THE SANDERLING.

Descr.—In winter plumage, all the upper parts cinereous, with the shafts of the feathers blackish brown; forehead and cheeks pure white; head and edge of the wing blackish grey; wing-coverts broadly edged with white; primaries dusky, with the edges and tips brownish; tail deep grey, the feathers edged with white, the two middle ones the darkest; all the lower parts pure white.

Bill black; irides deep brown; legs black. Length 8 inches; wing $4\frac{3}{4}$; tail 2; bill at front rather more than 1; tarsus nearly 1.

In summer plumage, the head and cheeks become black, the back and scapulars ferruginous with black spots, and the throat, neck, and breast reddish-ash, with black spots.

The Sanderling appears to be rare in India. I obtained it on the sea-coast at Nellore, but no other instance of its occurrence is recorded. It appeared to me tolerably abundant, and not being aware at the time of its rarity in this country, I only preserved one specimen. It is found throughout the Northern part of both Continents, spreading South in winter.

It is the only species of the genus.

Sub-fam. PHALAROPINÆ, Gray.

Feet with the toes bordered by a free membrane cut into lobes as in the Coots; otherwise much as in *Tringa.*

The Phalaropes or Lobefoots are placed by Bonaparte in a separate family, *Phalaropidæ*, which he unaccountably separates

from the nearly allied *Tringinæ*, placing them between *Recurvirostra* and *Scolopacinæ*. Yarrell classes them with the Coots. They have dense plumage, are said to swim well and even dive, and frequent lakes and rivers as well as sea-coasts. They have the extraordinary habit of the males alone incubating, the females forsaking their nests and leading a wandering life. They are very Northern birds, and their occasional occurrence in India appears almost accidental. Only two species are known, both of which have been procured in India.

Gen. PHALAROPUS, Brisson.

Char.—Bill somewhat broad and depressed; the feet lobed; otherwise as in *Tringa*.

889. Phalaropus fulicarius, LINNÆUS.

Tringa, apud LINNÆUS—BLYTH, Cat. 1603—GOULD, Birds of Europe, pl. 337—Phal. platyrhynchus, TEMMINCK.

THE COOT-FOOTED STINT.

Descr.—In winter plumage, the forehead and crown white; occiput, ear-coverts, and a streak down the nape of the neck, dusky grey; back, scapulars, and rump, bluish-ashy, with the shafts dusky, some of the scapulars edged with white; wing-coverts tipped with white, forming a transverse bar on the wing; tail dusky grey, the feathers edged with cinereous; throat, sides of the neck, middle of the breast, and all the under parts pure white, the sides of the breast ashy.

Bill yellowish red at the base, dusky brown at the tip; irides reddish-yellow; legs greenish grey. Length 8½ inches; wing 5; tail 2½; bill at front ⅞; tarsus ⅞.

This species has only been obtained once, I believe, by Mr. Blyth, in the Calcutta market, and is not recorded by any other observer. It chiefly inhabits high Northern latitudes in both Continents, is somewhat rare in England and the South of Europe, and breeds very far North. The eggs of both this and the next species are described as being stone-green, thickly spotted with dark green or black.

The next species has the bill slender and pointed, and has been separated generically as *Lobipes*.

890. Phalaropus hyperboreus, Linnæus.

Tringa, apud Linnæus—Blyth, Cat. 1926—Gould, Birds of Europe, pl. 336.

The Lesser Coot-footed Stint.

Descr.—Forehead white; crown, occiput, and nape dusky brown; the back, scapulars, and two middle tail feathers the same, but the feathers broadly edged with pale red; wing-coverts and primaries dusky, edged with whitish; all the lower parts white, passing into pale ashy on the sides of the breast and flanks.

Bill dusky; irides brown; feet yellowish green. Length 6½ inches or more; wing 4⅜; tail 2¼; bill $\frac{15}{16}$; tarsus ¾.

In summer plumage the back and scapulars are deep black, with reddish edges; the wing-coverts black with a white band, and the neck ferruginous.

A single instance is on record of the occurrence of this bird in India. It was obtained by Dr. Stewart at Madras. Possibly this and the last species may be found to be more common when our sea-coasts have been well examined. This species has a similar geographical distribution with the last, but is also recorded from New Guinea, and is probably Bonaparte's *P. australis.*

The only other member of this sub-family is *Phal. Wilsonii,* Sabine, (*fimbriatus,* Temminck, *Lobipes incanus,* J. & S.), from North America, separated under the name of *Steganopus,* Vieillot, (*Holopodius,* Bonap).

Sub-fam. Totaninæ.

Bill moderately long, slender, with the tip hard and pointed, slightly ascending in some; tarsi slender, rather long; feet elongate; outer toe joined by web to the middle one. Change of plumage in summer slight in some, in others to black or dusky beneath and not to rufous.

Sandpipers run along the muddy and pebbly banks of rivers or lakes, and seas, and pick up various small crustacea and molluscs generally from the surface of the ground, not inserting their bills deeply like Snipes and Stints. Several are solitary in their habits, a few inclined to be gregarious. They are all winter visitants to

India, breeding in Northern and Central Europe and Asia, and laying four eggs, green or greenish-white with numerous spots.

Gen. ACTITIS, Illiger.

Syn. *Tringoides*, Bonap. (partly.)

Char.—Bill moderate or rather long, slender, straight, compressed, and accuminate, with the tip hard; the groove of the bill extending quite to the tip; wings moderately long, with 1st quill longest; tail slightly lengthened; tarsus rather short or moderate; toes rather long.

This genus comprises some small Sandpipers of more or less solitary habits, and universal distribution, which do not greatly change their plumage in summer.

The first species is separated as *Rhyachophilus*, Kaup.

891. Actitis glareola, GMELIN.

Tringa, apud GMELIN—BLYTH, Cat. 1583—JERDON, Cat. 353—SYKES, Cat. 193—HARDWICKE, Ill. Ind. Zool., 2, pl. 51, f. 2—T. affinis. HORSF.—T. glareoloides, HODGSON—GOULD, Birds of Europe, pl. 315, f. 2.—*Chupka*, or *Chopka*, or *Chobaha*, H.—*Chinna ulanka*, Tel.

THE SPOTTED SANDPIPER.

Descr.—In winter, the plumage is deep brown on the forehead, crown, back, and wings, with white and greyish spots on the back; a dusky streak between the gape and the eye, and a white supercilium; cheeks and nape dirty white with ashy-brown spots; upper tail-coverts pure white; tail narrowly barred black and white, the two outer feathers on each side entirely white; throat white; foreneck and breast dirty white, with spots and streaks of ashy-brown; flanks barred with the same; abdomen and under tail-coverts pure white.

Bill greenish at the base, dusky black at the tip; irides deep brown; legs pale greenish. Length 8½ to 9 inches; extent 16½; wing 5; tail 2; bill at front $1\frac{2}{10}$; tarsus 1½.

In summer, the feathers of the crown and nape are distinctly streaked brown and white; the feathers of the back have a large

black spot, as well as the white spots, and the white of the lower parts is purer.

The Spotted Sandpiper is very common throughout all India in the cold season, is sometimes seen alone, frequently in very small parties, by the grassy sides of tanks and in paddy fields, or damp meadows, being, as Irby correctly observes, more a marsh Sandpiper than the other two species. One or two closely allied races from America are distinguished by Systematists.

The next species is classed as *Helodromus* by Koch., and is the only one of the group.

892. **Actitis ochropus,** LINNÆUS.

Tringa, apud LINNÆUS—BLYTH, Cat. 1584—JERDON, Cat. 354—SYKES, Cat. 192—Tot. leucurus, GRAY, HARDW., Ill. Ind. Zool. 2, pl. 51, f. 1—GOULD, Birds of Europe, pl. 315, f. 1—*Nella ulanka*, Tel.

THE GREEN SANDPIPER.

Descr.—Crown, nape, and upper parts ashy-brown, tinged with olive-green, all the feathers of the back, scapulars, and wing-coverts, with an edging of small white spots; quills deep brown; upper tail-coverts pure white; tail with the basal third white, the rest white with brown bars, the two outermost feathers entirely white; a brown streak from the gape to the eye, and a white supercilium; all beneath pure white, a few of the feathers on the neck and breast with dusky streaks.

Bill dusky green, blackish at the tip; irides brown; legs dingy green. Length $9\frac{3}{4}$ to $10\frac{1}{2}$ inches; wing $5\frac{1}{2}$ to 6; extent 18 to 19; tail 3; bill at front $1\frac{4}{10}$; tarsus $1\frac{1}{2}$.

In summer, the upper parts are darker, greener, and more spotted, and the streaks on the neck more distinct.

The green Sandpiper is equally, if not more common than, the last species; it is to be seen near every tank, or river side, and even by most pools of water; also in rice fields and bare swampy spots. It is one of the earliest of the tribe to come in, and I have seen it in Northern India towards the end of July. It is generally solitary. It is possible that some few couples may breed in

Northern India, among the hills, as Capt. Irby mentions having seen them in May, June, and July.

The next species is kept under restricted *Actitis*, (*Tringoides*, Bonap. apud Gray—and *Guinetta*, Gray.)

893. **Actitis hypoleucos**, LINNÆUS.

Tringa, apud LINNÆUS—BLYTH, Cat. 1586—SYKES, Cat. 194—JERDON, Cat. 355—A. empusa, GOULD—GOULD, Birds of Europe, pl. 318—*Potti ulanka*, Tel.

THE COMMON SANDPIPER.

Descr.—All the upper parts ashy-brown glossed with green, and the shafts darker; back and wing-coverts with fine transverse brown lines; a white supercilium; quills brown with a large white spot on the inner webs of all except the first two; the four central tail feathers like the back; the two next tipped with white, the outer one tipped white, and barred on the outer web with brown and white; beneath pure white, streaked with brown on the neck and breast.

Bill dusky; irides brown; legs pale green. Length $7\frac{3}{4}$ to $8\frac{1}{4}$ inches; extent $13\frac{1}{2}$; wing $4\frac{1}{4}$ to $4\frac{1}{2}$; tail $2\frac{4}{10}$; bill at front 1; tarsus 1.

In summer, the green reflections are said to be stronger, but there is no other change.

The common Sandpiper of Europe is perhaps in India the least common of the three species of Actitis, it is usually to be met with about the muddy shores of tidal rivers, canals, &c., more plentifully than elsewhere, also on the pebbly banks of rivers. Like the last two species it is generally solitary. Its flight is somewhat jerking, with intervals of rest, when the wings are slightly bent downwards. This Sandpiper and the last are almost universally distributed, and breed in Northern and temperate regions.

Tot. macularia, L., is placed in this genus as restricted, and is occasionally killed in Britain.

Gen. TOTANUS, Bechstein, (after Ray).

Char.—Bill straight or slightly ascending, stouter than in *Actitis*, the tip distinctly curved; otherwise as in *Actitis*, but the

tail somewhat shorter, and the groove of the bill not extending quite to the tip.

There are two types in this genus, even as restricted, the one with the plumage more like that of *Actitis*, and barely changing in summer; the other changing in summer, and becoming more or less dusky black.

1*st*. With the bill slightly ascending, (*Glottis*, Nilsson.)

894. Totanus glottis, Linnæus.

Scolopax, apud Linnæus—Blyth, Cat. 1578—T. glottoides, Vigors—T. nivigula, Hodgson—Sykes, Cat. 195—Jerdon Cat. 349—Gould, Cent. Him. Birds, pl. 76—Gould, Birds of Europe, pl. 312—*Timtimma* or *Tuntuna*, H. from its call—*Gotra*, Beng.

The Greenshanks.

Descr.—In winter plumage, the head, cheeks, sides, and back of neck, cinereous white with brown streaks; upper back, scapulars, and wing-coverts, dusky brown, the feathers edged with yellowish white; the lower back and upper tail-coverts pure white; quills dusky, some of them spotted with white on their inner webs; tail white with cross bars of brown, the outer feathers entirely white with the exception of a narrow streak on the outer web; throat, foreneck, middle of the breast, and lower parts pure white; the sides of the breast streaked with brown, and somewhat ashy.

Bill dusky greenish; irides brown; legs yellowish-green. Length 14 to 15 inches; extent 25; wing 8; tail $3\frac{3}{4}$; bill at front $2\frac{2}{10}$; tarsus $2\frac{3}{4}$.

The Greenshanks is to be seen in every part of India, usually alone, now and then in small parties. It chiefly frequents the edges of rivers, tanks, or pools, but is now and then put up from an inundated rice field, or low swamp. It rises with a loud shrill cry, which the native name attempts to imitate. It is excellent eating; as Pallas remarked, 'Sapidissima avis in patina.' It reaches this country towards the middle or end of September, and leaves for the North in April.

The next species is closely related to the Greenshanks, of which it may be said to be a diminutive form, but its summer change of

plumage is greater; it is kept by some Systematists under *Totanus* as restricted.

895. Totanus stagnatilis, Bechstein.

Blyth, Cat. 1579—Limosa Horsfieldii, Sykes, Cat., 196—Jerdon, Cat. 350—S. totanus, Linn.—T. Lathami, Gray, Hardw., Ill. Ind. Zool. pl.—Gould, Birds of Europe, pl. 314—*Chota gotra*, Beng.

The Little Green-shanks.

Descr.—Above pale ashy-brown, the nape streaked with dark-brown, the top of the head and neck, and the scapulars edged with whitish; eyebrows and cheeks white, spotted with brown; greater wing-coverts pale ashy, edged whitish; the lesser coverts ashy-brown, with paler edges, and the stem black; quills brown black, the shafts white; lower back white; tail white, with brown bands; beneath pure white; the sides of the neck, of the breast, and the flanks spotted with brown.

Bill dusky-green; irides brown; legs pale green. Length 10½ inches; wing 5½; tail 2; bill at front 1⅝; tarsus 2¼.

In summer, the plumage becomes very dark above, mixed black, rufous and ashy, and the lower parts are marked throughout with small round black spots.

This pretty little Sandpiper is less generally spread perhaps than any of the preceding species, but is now and then met with in large numbers. It frequents young rice fields, and open marshy spots, but is also seen on the bare edges of tanks. I saw it in large flocks on the banks of the Trichoor Lake in South Malabar, and have obtained it occasionally in various parts of the country. It is found generally throughout the Old World, extends as far as Australia, and breeds, as usual, in the North.

The two next species have red legs, a peculiar coloration, the wings with much white, and the change of plumage very great. They are more social than the other *Totaninæ*. They constitute the Gen. *Totanus* as restricted of some, *Gambetta* and *Erythroscelis* of Kaup. The first is very unnecessarily separated as *Erythroscelis*, of which it is the only species.

896. Totanus fuscus, Linnæus.

Scolopax, apud Linnæus—Jerdon, Cat. 351—Blyth, Cat. 1581—Hardwicke, Ill. Ind. Zool. 2, pl. 53.—Scol. nigra, Gmelin—Gould, Birds of Europe, pl. 309—T. ocellatus, Bonap. —*Batan*, H.—*Yerra kal ulanka*, Tel.

The Spotted Red-shanks.

Descr.—In winter plumage, the crown, nape, and back ashy-grey, with fine dusky streaks; a blackish patch between the bill and the eyes, and a white streak above; cheeks and neck variegated white and ashy; wing-coverts and scapulars grey, edged with white; rump pure white; central tail-feathers uniform ash-grey, narrowly edged with white; outer tail-feathers with white and brown bars; throat, breast, abdomen and under tail-coverts pure white.

Bill blackish, orange at the base beneath; irides brown; legs orange red. Length 13 inches; extent 22½; wing 6¾; tail 2½; bill at front $2\frac{4}{10}$; tarsus $2\frac{8}{10}$.

In summer, the head, neck, and under parts become dusky or blackish grey, and the vent and lower tail-coverts are barred white and brown.

The large or spotted Red-shank is found throughout India in the cold season, either solitary or in moderate parties. Specimens killed in April have generally assumed more or less the dusky plumage of summer.

The next species, with many others, is placed under *Gambetta*, Kaup.

897. Totanus calidris, Linnæus.

Scolopax, apud Linnæus—Blyth, Cat. 1582—Jerdon, Cat. 352—Tring. gambetta, Gmelin—*Chota batan*, H.—Gould, Birds of Europe, pl. 310.

The Red-shanks.

Descr.—In winter, the crown, lores, back of neck, upper back, scapulars and wing-coverts cinereous-brown, darker on the shafts; supercilium white; sides of the head greyish-white; lower back

white; primaries and their coverts dusky brown; the secondaries white for the greater portion of their length; upper tail-coverts and tail barred with white and dark brown; throat white; fore-neck and breast greyish white; abdomen and lower tail-coverts white.

Bill reddish at the base, dusky at the tip; irides brown; legs and feet pale red. Length about $10\frac{1}{2}$ to $11\frac{1}{2}$ inches; wing 6; tail $2\frac{4}{10}$; bill at front $1\frac{1}{10}$; tarsus $1\frac{8}{10}$.

The common Red-shanks is found throughout the greater part of India in the cold season, and often in large flocks. It is generally recognised during flight by the extent of white on the wing. It is noisy and watchful, and is supposed to be the *Martyros* or Tell-tale of the Greeks. Irby mentions that he has seen a flock of thirty or forty, each one a little in rear of another, forming a sort of oblique line, and advancing across a shallow jheel, all with their heads half immersed in the water, and moving them from right to left with great rapidity. Both species of Red-shanks are inhabitants of the greater part of Europe and Asia, breeding in the North.

Several other species of *Gambetta* are recorded from the Oceanic region and America. The Willet of Europe, *Tot. semipalmatus*, Linn., is classed under *Symphemia*, apud Gray, (*Catoptrophorus*, Bonap.); and *T. bartramius*, Wilson, of North America, with *T. australis*, J. and S., are placed under *Bartramia*, Lesson, (*Actiturus*, Bonap. which he states to be closely related to *Oreophilus*).

Oreophilus ruficollis, (*totanirostris*, Jard., *Dromicus Lessoni*) is a doubtful member of this family, and perhaps belongs to the Plovers, as placed by Gray. *Phegornis Mitchelli*, Fraser, is the only other type given by Bonaparte among the *Totaninæ*, and this is also by some looked upon as a Plover.

Fam. HIMANTOPIDÆ.

Syn. *Recurvirostridæ*, Bonap.

Of black and white plumage, not changing in summer; the legs very much lengthened; bill long and very thin, and, in one genus, recurved.

The two genera placed in this family differ from all the Snipes and their allies in their remarkably slender bills, and length of leg,

as well as in their mode of coloration; but they resemble them in all essential points of structure; and are merely two exaggerated forms of the family. Bonaparte formerly divided this group into two sub-families, but subsequently re-united them, stating that they were completely joined by *Cladorhynchus*.

Gen. HIMANTOPUS, Brisson.

Char.—Bill long, twice the length of the head, very slender, somewhat rounded, pointed, channeled on the sides as far as the middle; tip of the upper mandible very slightly bent over the under one; nostrils linear; wings long, pointed, 1st quill longest; tail short, even, of twelve feathers; tibia bare for the greater part of its length; legs very long, thin, reticulated; toes short; outer toe joined to the middle one by a broad web; inner one with a very small web; nails short, flat; hind toe wanting.

898. **Himantopus candidus**, BONNATERRE.

P. E. 878—JERDON, Cat. 348—SYKES, Cat. 211—BLYTH, Cat. 1572—H. asiaticus, LESSON—H. intermedius, BLYTH, Cat. 1573—GOULD, Birds of Europe, pl. 289—*Gaj-paun*, H.—*Lal-gori*, in Bengal, or *Lam-gora*.

THE STILT OR LONG-LEGS.

Descr.—Back of the head black or dusky, more or less mixed with whitish, in some nearly all white, in others with only the napé black; back and sides of neck grey; interscapulars and wings glossy green black; tail pale ash-grey; rest of the plumage including the back and rump pure white, sometimes tinged with rosy on the breast.

Bill black, reddish at the base; feet lake-red; irides blood-red. Length 15½ inches; wing 9; extent 30; tail 3; bill at front 2¾; tarsus 4½ to 5½.

Old birds, according to Temminck, have often the head pure white throughout; and young birds have the black less pure, edged with whitish, and the head dingy white. Blyth at one time considered that certain specimens with the head white, or nearly so, differed from the common species; these he named *H. intermedius*, as being intermediate between *H. candidus*

and Gould's *H. leucocephalus*, figured in pl. 24 of the 6th Volume of his Birds of Australia: latterly he doubted their being distinct; and he has since written me from England, that many European specimens are colored exactly like the Indian white-headed specimens.

The Stilt is found in numerous flocks throughout all India in the cold weather, frequenting the edges of tanks and rivers, and occasionally inundated paddy fields, and feeding on various small molluscs, worms, and insects. A late observer in England records that he found it feeding on the minute *diptera* and beetles which nestle in the flowers of aquatic plants: for capturing insects under such circumstances its delicate bill seems well adapted. When flying it has a peculiar Tern-like call. It is stated that it swims well, but I have never seen any but a wounded bird attempt to do so. It breeds chiefly in Northern regions, but also in Northern Africa, laying four eggs in a tuft of grass. Pallas states that it frequents the salt lakes in Central Asia, coming in very late, and that he has seen several dancing together, jumping up with expanded wings, and at the same time calling out.

H. leucocephalus, Gould, from new Holland, is probably a distinct species; and another is *H. novæ zealandiæ*, Gould, entirely black.

The only other recorded species, if really distinct, is *H. mexicanus*, (*himantopus*, apud Wilson). *Cladorhynchus orientalis*, (*Him. palmatus*, Gould) from Australia, is exactly intermediate in form between *Himantopus* and *Recurvirostra*.

Gen. RECURVIROSTRA, Linnæus.

Char.—Bill very long, thin, flexible, turned up towards the tip, which is very thin and pointed, channeled both above and below; nostrils long, linear; wings long, pointed; tail somewhat wedged; tarsi moderately long, and slender; front toes united by a web which is notched in the middle; hind toe very minute; nails short, curved.

The Avosets from their strongly webbed feet were classed by Temminck and others near the Flamingo; but Cuvier rightly restored them to their proper place near *Himantopus*, which they resemble in their mode of life.

899. Recurvirostra avocetta, Linnæus.

Jerdon, Cat. 347—Blyth, Cat. 1575—Gould, Birds of Europe, pl. 368—*Kusya chaha*, in Behar.

The Avoset.

Descr.—Crown of the head, nape, most of the hind neck, scapulars, lesser wing-coverts, and primary quills, deep black; all the rest of the plumage pure white.

Bill black; irides red brown; legs pale bluish-gray. Length 18 inches; wing 8½; tail 3; bill at front 3½; tarsus 3¼.

The Avoset is not a very common bird in India, but is met with occasionally throughout the whole country, frequenting the edges of tanks and rivers, generally in small flocks. It feeds both on the muddy edges of tanks, and in the water, chiefly on small worms, young molluscs, and the larvæ of water insects. A writer in the *Bengal Sporting Magazine* states that, "their feeding ground may be traced out from the semi-circular mark made in the mud by their bills when scooping for their food." Pallas states that it chiefly frequents the salt lakes in Central Asia, extracting small worms, insects, and saline crustacea from the salt soil. Like the bird last described it is stated to be able to swim well. One which was kept in confinement is recorded to have scooped up the fry of fish very readily.

Other species of Avoset are *R. orientalis*, Cuvier, (*leucocephala*, Vieill.), and *R. rubricollis*, Temminck, from Australia; and *R. americana*, and *R. occidentalis*, from America.

Tribe Latitores.

Syn.—*Macrodactyli*, Cuvier, *Alectorides*, Bonap.

Feet very large; anterior toes usually free to the base, edged by a web in a few; hind toe large; beak usually short or moderate, stout, compressed; wings short or moderate, generally armed with spurs or tubercles near the flexure; tail generally short.

The *Latitores* or Skulkers, as Blyth named them, include the Rails, Water-hens, Coots, and Jacanas. This tribe comprises a number of small or moderate sized birds, whose stout legs and long feet enable them to walk easily on soft and marshy ground, or even on aquatic plants. They run swiftly, but fly badly, and

feed on seeds and vegetable matter as well as insects. The females are usually larger than the males; they nidificate on the ground among reeds and grass, or in floating nests, lay several eggs, and the young run soon after they are hatched. A few are migratory. They have often loud and peculiar calls.

The body is usually much compressed; the sternum very narrow with one fissure, the stomach muscular, and the intestines long, with one or two cæca. As previously stated (*vide* p. 604), some of them are not very distantly removed from the Ostriches and Cassowaries, and they have also some resemblance to *Megapodius*. They are divided into two families, *Parridæ and Rallidæ*.

Fam. PARRIDÆ.

Syn. *Palamedeidæ*, Gray.

Feet enormous; claws much lengthened; bill moderate, compressed; wings spurred or tubercled.

There are two groups in this family, the one *Palamedeinæ* confined to the warmer regions of America; and the other *Parrinæ* or Jacanas, found in all tropical and sub-tropical regions.

Sub-fam. PARRINÆ.

Of small or moderate size; feet and claws enormously long, thin.

The Jacanas, as these birds are called in America, (by which name they are also tolerably well known in India,) are birds frequenting weedy tanks and jheels; their long toes enable them to walk with ease on the floating plants. They have a double moult, the breeding plumage being rich and shining; in one genus the tail feathers also become excessively elongated at this season. They make a floating nest of herbage, and their eggs are of a rich olive brown with or without dark lines. Their flight is strong, but somewhat irregular and flapping, not hurried and regular as that of the Rails in general. They differ considerably from the *Rallidæ* in structure, in the more plump form of the body, the colour of the eggs, and the general appearance and gait, and Blyth at one time considered them allied to the Plovers; their huge feet however bring them into the present tribe, of

which they may be said to form a well characterized family: the fact of the females being much larger than the males militates against their association with the Plovers.

Gen. METOPIDIUS, Wagler.

Bill moderate, stout, compressed, thick at the base, culmen curved at the tip; forehead with a lappet or caruncle of skin; tail short; nostrils small, ovate, in the middle of the bill; wings moderate or short, 2nd and 3rd quills longest, 1st sub-equal, spurred, or tuberculate at the shoulder; tarsus long; feet enormous, the toes long and thin, and the claws very long and pointed; hind claw especially long.

900. Metopidius indicus, LATHAM.

Parra, apud LATHAM—BLYTH, Cat. 1613—P. ænea, CUVIER—P. superciliosa, HORSFIELD, Zool. Res. Java, pl.—JERDON Cat. 326—HARDWICKE, Ill. Ind. Zool. pl.—P. atrata, TICKELL, (the young)—*Dal-pipi*, and *Jol-pipi*, *also* *Karatiya*, Beng.—*Kattoi*, in Purneah.

THE BRONZE-WINGED JACANA.

Descr.—Head, neck, and all the under parts rich dark green, glossed on the head, neck, and breast, and with purple reflections on the back of the neck and upper back; a broad white supercilium beginning just over the eye; interscapulars, wing coverts, (except the primary), scapulars, and tertiaries, pale shining bronze; the lower back maroon, with a beautiful purple gloss; tail dark cinereous, the lateral feathers bordered with black, tipped white, and with a white shaft; primary coverts and quills black, faintly glossed with green; lower abdomen and thigh-coverts dull blackish green; under tail-coverts deep chesnut.

Bill greenish yellow, tinged with red at the base, and the frontal lappet livid; irides brown; legs dull green. Female, length 12 inches; extent 24; wing $7\frac{1}{2}$; tail $1\frac{3}{4}$; bill at front $1\frac{1}{4}$; tarsus 3; middle toe and claw 4; hind toe and claw $3\frac{1}{8}$. Male, length 10; extent $20\frac{1}{2}$; wing 6; tail $1\frac{5}{8}$; bill $1\frac{1}{8}$; tarsus $2\frac{3}{8}$; middle toe $3\frac{5}{8}$; hind toe $3\frac{1}{4}$; claw alone $2\frac{1}{2}$.

The young bird (and I believe also the adult in winter plumage) has the crown chesnut, with a pale eyebrow; the face white; back of the head and hind neck purple, with a lake and coppery gloss; the back cupreous olive green; the upper tail-coverts and tail dull coppery; quills and primary coverts black; tertials as the back, partly edged with white; throat white; neck and breast pale buff with a median white stripe, and the belly white with the flanks blackish; thigh-coverts mixed black and white.

Bill yellowish green, darker on the upper mandible, the front lappet is also wanting, and this appears to be developed at the breeding season only.

Blyth states that this species does not moult in spring, but my observations tend to show that it has a double moult, although a few birds appear to retain their breeding dress throughout the year.

This handsome *Jacana* is found throughout India, in jheels, marshes, and weedy tanks, running with great ease over the floating grass and vegetation. It has a harsh loud cry, and it breeds during the rains, making a floating nest of weeds in some sheltered part of a jheel, and laying several eggs dark olive-brown, lined and streaked with black. It feeds chiefly on vegetable matter, seeds and roots, or the bulbs of some floating plants, also partially on insects. It extends over Burmah and many of the Malayan isles.

Other species of *Metopidius* are found in Africa.

Gen. HYDROPHASIANUS, Wagler.

Char.—Bill more slender than in *Metopidius*, forehead without a lappet; tail very long, the four central feathers especially greatly lengthened at the breeding season; wings long, with the 1st and 2nd quills equal, and longer than the 3rd; the 1st and 4th primaries with a lancet shaped portion of web, as it were, appended to the tip; hind claw not so long as in *Metopidius*, otherwise similar to that genus. Peculiar to South Eastern Asia.

901. **Hydrophasianus chirurgus**, SCOPOLI.

Tringa, apud SCOPOLI—Parra sinensis, GMELIN—BLYTH, Cat. 1614—JERDON, Cat. 327—SYKES Cat. 201—GOULD, Cent. Him. Birds, pl. 77—HARDWICKE, Ill. Ind. Zool. 2, pl. 55—GOULD, Birds of Asia, pt. VII, pl. 3—*Piho*, or *Pihuya*, H—

Dal-kukra, also *Dal-pipi*, *Jal-manjor*, and *Chittra billai*, in Bengal and Behar—*Surdal* or *Sukdal*, in some parts, also *Miwa*.

The Pheasant-tailed Jacana.

Descr.—In summer plumage, the forehead, top of the head, face, chin, throat, and neck white, a broad black mark on the top of the head; hind neck pale shining yellow, edged by a dark line; upper plumage, including the scapulars and tertiaries, shining dark olive brown with purple reflections; wings with the coverts white, 1st primary black, the 2nd nearly so, and the 3rd black on the outer web and a broad tip, the rest white, all tipped with black, as are the greater wing-coverts; upper tail-coverts bronzed black, tail black; beneath, from the breast, deep brownish black, dull on the thigh-coverts; the under tail-coverts deep chesnut.

Bill pale leaden blue at the base, greenish at the tip; irides dark brown; legs pale bluish green. Male, length 18 inches; extent 24; wing 8; tail 10; tarsus $2\frac{1}{8}$; bill at front $1\frac{1}{8}$; middle toe 3; hind toe and claw 2, of which the claw is $1\frac{1}{4}$. The female is a larger bird. One measured above 20 inches; extent 30; wing $9\frac{1}{2}$; tail 11; tarsus $2\frac{3}{8}$; middle toe and claw $3\frac{1}{2}$; bill at front $1\frac{1}{4}$.

The primaries from the 4th are all much pointed, and the tip of the 1st and 4th have a narrow appendage of web, as it were fixed on to the point.

In winter plumage, the upper parts, including the lesser wing-coverts and tertiaries, are pale hair brown, the former more or less barred with white, and the greater coverts pure white; the top of the head and back of the neck brown with a white supercilium, and the feathers of the forehead white-spotted; a pale golden yellow line from behind the eye, down the sides of the neck bordered by a black line from the gape, which crosses the lower part of the breast forming a more or less broad pectoral gorget, 1st primary (only) with an appendage, 4th attenuated and prolonged; tail with the central feathers as the back, pale brown, slightly lengthened.

Length 12 to 13 inches; wing 8 to end of second primary; tail 3 to 4. In young birds the superciliary line is ferruginous, passing

into a less marked yellow neck stripe, and the brown band is also less distinct.

This handsome bird, like the last, is spread throughout India and Ceylon, in similar localities, but it perhaps less affects concealment, exposing itself on the top of some Lotus or floating plants, and when approached generally flying off and not endeavouring to conceal itself in the herbage. Some of the males appear to get the breeding plumage very early, or not to lose it, for I have seen it in February with its summer vesture, long tail, &c.: most of the birds however do not change till from April to June. It makes a large floating nest of dried pieces of grass and herbage, sometimes, according to some accounts, of the stalks of growing rice which it bends downwards and intertwines, and it lays, in July or August, from four to seven eggs, sometimes more, of a fine bronze brown or green. It has a loud call, likened by some to the mewing of a cat, or a kitten in distress, by others to the distant cry of a hound; an imitation of the sound is attempted in the Hindustani names, *Piho*, and *Meewah*. The Cingalese, also, according to Layard, call it the *Cat-teal*. Like the last species, it feeds chiefly on vegetable matter but also on shells and water insects.

In Purneah the natives say that before the inundation, *i. e.*, during the breeding season, it calls *dub dub*, *i. e.*, go under water; and afterwards, in the cold weather, *powar*, *powar*, which, in Purneah dialect, means next year.

Gould, in his birds of Asia, states that the filamentous appendages of this bird militate against its flight: this certainly does not appear to be the case, and he further says, (probably from imperfect information) that the seasonal changes have not been fully ascertained. In winter this species is gregarious, though perhaps less so than the last bird. If only wounded it is difficult to find, as it dives at once and remains with its bill only out of the water. The flesh is said to be excellent. Blyth states that he has kept both this and the previous species in confinement, and that they thrive well on shrimps. The present bird was, in the aviary, rather quarrelsome with its kind.

The genus *Parra* is restricted to some American birds, and one of the best known is *P. jacana*, Lin., from Brazil. In this group

the base of the bill is furnished with a large, free dilated plate, as indeed it is in *P. gallinacea*, Temminck, from Australia and New Guinea: *P. cristata*, Vieill., has been separated as *Hydralector*; it has a crest, and the spurs on the wings are wanting.

The sub-family *Palamedeinæ* or Screamers, may be said to consist of Jacanas of a large size. *Palamedea cornuta* or the Horned Screamer, is as large as a goose, and has a very loud voice: it has two spurs on each wing, the legs reticulated, and a long slender sort of horn on its forehead. *Chauna chavaria*, (Linn.) has the occiput furnished with an erectile crest, the neck downy, and the outer toe joined to the middle one by a web: it is domesticated by some of the South-American Indians. A second species has been separated as *Ischyornis Derbianus*.

Fam. RALLIDÆ.

Bill more or less compressed, short, pointed, and wedge shaped; nostrils median, in a short groove, pervious; legs stout; tarsus short, or moderately long; feet large; wings moderate or short, and rounded, usually with a tubercle or small spur on the flexure; tail short or almost wanting.

The most characteristic points of this family, (which includes the Water-hens, Coots, and Rails,) are the large feet, and the short stout and compressed beak. The head is small and compressed, the neck short, and the body also compressed. Their general aspect, and their partially vegetable diet, give them the appearance of Gallinaceous birds, and several have in consequence received popular names significative of this resemblance. Some are furnished with membranes or webs on their toes, and swim well, as indeed do others which are not thus provided.

The sternum is peculiarly narrow, with one long emargination, and the furcula is thin and feeble. The stomach is a muscular gizzard, the intestines rather long, and the cæca also large. The females of some are larger than the males; they are rather noisy and pugnacious birds; and all frequent the neighbourhood of water or marshy ground. This family appears to be extensively represented in Australia and Oceanica, less so in the Malayan islands.

It is divided into two sub-families, *Gallinulinæ*, the Coots and Water-hens; and *Rallinæ*, the true Rails.

Sub-fam. GALLINULINÆ.

These birds are generally of larger size and stouter make than the Rails, and the base of the bill, (in many), is expanded into a plate occupying more or less of the forehead; the toes are bordered by a narrow web, which in one genus expands into large scolloped lobes; they are more aquatic than the Rails, mostly living in the immediate vicinity of water, and many swimming and diving with ease. They feed chiefly on vegetable matter, seeds, &c.

The first genus is peculiar to the warmer regions of the world.

Gen. PORPHYRIO, Brisson.

Char.—Bill very strong, thick, conic, compressed, base prolonged into a thick horny casque covering the forehead and the top of the head; upper mandible very thick, curving from the base, pointed; lower mandible less thick; gonys ascending; gape gently curving; nares apert, oval, in the middle of the bill; wings moderate, ample, the 3rd and 4th quills the longest; tail short, tarsus lengthened, strong; toes very long, free, bordered by a narrow web; claws long, very slightly curved.

The stomach is a strong, tendinous gizzard; the intestines and cæca are long. The tongue is thick and somwhat fleshy, horny at the tip and brushed.

This genus has of late been sub-divided; the Indian species is the type of *Cæsariornis* of Reichenbach.

902. **Porphyrio poliocephalus**, LATHAM.

JERDON, Cat. 328—BLYTH, Cat. 1657—SYKES, Cat. 204—*Keim*, *Kaima*, *Kalim*, and *Kharim*, H.—*Kem*, Beng.—*Nila bolakodi*, Tel.

THE PURPLE COOT.

Descr.—Lores, round the eyes, cheeks, hind head and nape, purple tinged with grey on the sides, and gradually passing into the purer purple of the hind neck, back, and upper tail-coverts; wing-coverts pale blue; the quills dull antwerp-blue, dusky on their inner webs; tail black, the feathers slightly edged dull

blue; beneath, the lower part of the cheeks, chin, and throat pale cœrulean blue, more or less edged with purplish grey, and passing into the purer blue of the lower neck and breast; abdomen, sides of the body and vent, abruptly deep purple, the thigh-coverts dull blue; under tail-coverts pure white; lower wing-coverts dull pale blue, quills and tail beneath glossy blackish.

Bill red, darker on the culmen, and with a blood-red spot at the base of each mandible; the casque cherry red; irides brick-red; legs dull pale brick-red. Length 18 to 19 inches; extent 30 to 32; wing 10; tail 4; tarsus $3\frac{1}{2}$; middle toe and claw $4\frac{3}{4}$; hind toe and claw $2\frac{1}{4}$.

The Purple Coot is found throughout all India and Ceylon, wherever there are weedy lakes, extensive marshes, or reedy rivers. It is social, and prefers those lakes and jheels where there are clumps of bushes here and there, on which it can perch, which it does very readily. It walks and runs rapidly over the surface of weedy lakes, and makes its way easily through thick reeds. Its flight is rather heavy and never prolonged far. It has a loud and somewhat fowl-like call. It feeds chiefly on seeds and vegetable matter, committing much havoc on the rice fields. It makes a large nest of grass, rice stalks, and the like, at the edge of the water, and lays six to eight eggs of a reddish or buff ground, with numerous small dark red and purplish spots. One writer in an Indian Periodical states that it makes its nest by excavating the ground under a bank of earth, among grass jungle; and he adds that the Natives assert that when a bird is wounded or killed, the body is conveyed by its comrades to one of these retreats, but this of course is unfounded.

The eggs are occasionally taken and set to fowls, and the young reared. It thrives well in confinement, and has then been observed laying hold of stalks of grain or other food with one of its feet. I am not aware that ovivorous propensities have been exhibited by this species, but an African bird, *Porph. veterum*, Gmel., (*hyacinthinus*, Temm.) found in several of the Mediterranean Islands, is said to destroy large numbers of wild ducks' eggs, by sucking them; one was seen to seize a duckling in its huge foot, crush its head and eat the brains, leaving the rest untouched.

There are several other species of this genus from all parts of the world. Perhaps, near *Porphyrio*, should be placed the remarkable *Notornis Mantelli*, Owen, of New Zealand, long supposed to be extinct.

The next genus has the feet with a free web in lobes along the anterior toes and, from this structure, it was erroneously classed by Temminck and others with the Grebes, under the title of *Pinnatipedes*.

Gen. FULICA, Linn.

Bill moderate or short, thick; the upper mandible gradually deflected, compressed, extending backwards into a horny shield on the forehead; nostrils small, placed in the middle of the bill; wings short, concave, with a tubercle at the flexure; the 2nd and 3rd quills longest; tail very short; tarsus moderate, compressed; toes very long, bordered by a wide lobed membrane, claws short, curved, and sharp.

The Coots constitute a well known group of birds, the most aquatic of this tribe, swimming freely and diving with ease. The common Coot has very long intestines and one long and narrow cæcum. The plumage is dense and soft, but open in texture.

903. **Fulica atra**, LINNÆUS.

BLYTH, Cat. 1677—SYKES, Cat. 205—JERDON, Cat. 329—GOULD, Birds of Europe, pl. 338—*Dasari*, *Dasarni*, H.—*Barra Godan* or *Godhan*, H. at Purneah—*Boli-kodi*, Tel.

THE BALD COOT.

Descr.—Head and neck deep black; upper plumage greyish black; below, the same, with an ashy tinge; bill dead white in the cold season, slightly tinged with rosy at the breeding season; frontal disk white; irides blood-red; feet dull green, with a garter of yellow, green, and red above the joint, in summer.

In the young bird the frontal disk is small, and the under parts pale greyish.

Length 15 to 16 inches; wing $7\frac{3}{4}$; tail 2; bill to base of disk $1\frac{3}{4}$, at gape $1\frac{5}{12}$.

The Coot is common in most parts of India, rare or wanting in some localities which seem perfectly adapted for it. It is found throughout Europe, Asia, and Northern Africa. It prefers weedy tanks, is found in considerable flocks, and is often seen in the middle of the day resting on the water in the middle of some large tank, far away from any weeds or cover. When first raised it appears to fly with difficulty, striking the surface of the water for many yards, but when fairly on the wing, it can fly tolerably well. It sometimes travels great distances, for it is often found on tanks that dry up during the hot weather. It dives well.

The Coot feeds chiefly on vegetable matter, seeds, and shoots of aquatic plants. It is a noisy bird at times, having a peculiar call. It makes a large nest, occasionally fixed, at other times of floating weeds; and lays six to eight eggs, of stone or reddish-grey color, with small red and dark brown speckles. Burgess states that some young birds he procured had bright orange hair-like feathers over part of their bodies.

Several species of Coots are recorded from all parts of the world. One, *Fulica cristata*, is furnished with a fleshy crest, and has been separated as *Lupha*, Reichenbach.

Gen. GALLICREX, Blyth.

Char.—Bill much as in *Gallinula*, but with the base (in the male) prolonged over the forehead, and rising into a fleshy caruncle or horn on the top of the head, which is only developed at the time of breeding; feet large; hind toe with the claw short, more curved than the others; otherwise as in *Gallinula*. Males larger than the females.

This is merely a large form of *Gallinula*, with a fleshy crest developed at the breeding season in the male, which moreover, unlike the Water-hens, is larger than the female. It appears to bear the same relation to *Gallinula* that *Fulica cristata* does to the common Coot.

904. **Gallicrex cristatus**, LATHAM.

Gallinula, apud LATHAM—BLYTH, Cat. 1660—Rallus rufescens, apud JERDON, Cat. 331—G. lugubris, and G. gularis, HORSFIELD, (male and female)—*Kora* or *Khora*, H. also *Kongra* of some.

THE WATER-COCK.

Descr.—Male, in breeding plumage dull black, the feathers of the back, wing-coverts, rump, and upper tail-coverts more or less edged with light brown; tertials dark brown, edged with pale whity-brown; edge of the wing white; quills dusky, the shaft of the 1st quill thick, white; tail blackish-brown, the outer feathers edged pale brown; lower wing-coverts dusky, with whitish edges.

Bill greenish-yellow, fine red at the base; the crest above one inch long, fleshy red; irides red; legs dull red. Length 16 to 17 inches; extent 23; wing 8½; tail 3½; tarsus 3; mid-toe 3¾.

The female has the crown of the head and a pale streak over the eye unspotted brown, the rest of the body above dark brown, all the feathers edged with pale fulvous, most broadly so on the back, scapulars, and wing-coverts; edge of the wing and outer web of 1st quill white; quills dusky brown; lores, cheeks, and sides of the neck plain brownish fulvous; the chin and throat whitish; the rest of the lower parts pale brownish-fulvous, the feathers barred transversely with brown, darkest on the flanks, outer thigh-coverts, and under tail-coverts, and whitish on the belly; wings beneath dark cinereous.

Bill red at the base, greenish yellow at the tip; irides brown; legs dull green. Length 14 inches; extent 22; wing 7; tail 2½; bill at gape 1¼; tarsus 2½; middle toe nearly 3.

The *Kora*, or Water-cock as it may well be termed from its large fleshy horn, is found in those parts of the country that are well watered, and abound in swamps and thick grassy tanks. In the South of India and in Central India it is far from common, and I have only myself obtained it there in South Malabar; it is however found in Ceylon, is very common in Lower Bengal, and still more so in the provinces to the eastwards, Sylhet, Chittagong, all through Burmah and, also in Malayana. It affects concealment much more than the Water-hens, running with activity through the thiek grass or tangled paddy, or on the surface of weedy tanks. It feeds on rice and other grains, or shoots of various water plants, and also on small molluscs and insects. It is a very noisy bird, and its loud sonorous booming cries, especially during the breeding season, must be familiar to many.

Taylor in his 'Topography of Dacca', states that the voice of this bird, before engaging in combat, is peculiar; the throat swells out and emits a deep hollow sound which is continued for several seconds, and is suddenly followed by a shrill, vibratory cry like that of the Trumpeter birds, (*Psophia*) of South America. Like many of the Rails it is partially nocturnal in its habits. The male birds are said to fight furiously, and are much prized by the natives, who keep them for that purpose, especially in Dacca, Sylhet, &c. where they sell for a high price. It is excellent eating, and according to a writer in the *Indian Sporting Review*, "the flesh, feather, and courage of the Khorah are all game."

Gen. GALLINULA, Brisson.

Syn. *Stagnicola*, Brehm.

Char.—Bill moderate, compressed, rather thick at the base, slightly curved at the tip, expanding into a small shield on the forehead; nostrils longitudinal, in a groove in the middle of the bill; wings moderate, 2nd, 3rd, and 4th quills sub-equal, with a small, sharp tubercle or spur; tail short; tarsus moderately long; the toes rather long, narrow, edged by a very narrow membrane.

Water-hens are found all over the world. The females are larger than the males.

905. Gallinula chloropus, LINNÆUS.

Fulica, apud LINNÆUS—BLYTH, Cat. 1675—G. akool, apud JERDON, Cat. 332—G. parvifrons, BLYTH—*Godhan*, H. in Behar—*Jumbu kodi*, or *Boli-kodi*, Tel.—*Jal-murghi*, H., popularly—*Dakak paira*, Beng.

THE WATER-HEN.

Descr.—Head dusky grey; the upper plumage deep olive; the wing dusky; edge of the wing white; throat, neck, and breast dusky grey, the rest of the under parts deep bluish-grey; the feathers edged with whitish, and the flanks with large streaks of white; under tail-coverts pure white, with a few black feathers intermixed.

Bill red at the base, yellow at the tip; irides red; legs and feet pale olive green, with an orange garter above the knee.

Length 12 to 13 inches; extent 20; wing $6\frac{3}{4}$; tail nearly 3; bill at gape $1\frac{1}{10}$; tarsus $1\frac{8}{10}$; middle toe and claw $2\frac{8}{10}$. The female is larger and somewhat richer colored than the male. The young has the head and upper parts olivaceous brown; the throat, neck in front, and a spot beneath the eye whitish; breast and beneath, pale grey.

The Water-hen is generally diffused throughout India and the whole of the Old Continent, preferring small rivers, jheels, and tanks bordered by a belt of shrubs and trees. It swims freely, but when approached always retreats to the shore, and conceals itself among the branches of trees or shrubs, which it climbs with great facility, or among thick reeds. It runs with the tail erect. The food of the Water-hen is chiefly vegetable, but it also takes aquatic insects, larvæ, and even it is said, small fish. It is considered good eating by many. It generally makes a large nest of weeds either floating or fixed to reeds and branches, and lays six to eight pinkish-cream or grey eggs, spotted and ringed with red-brown.

906. **Gallinula Burnesii**, Blyth.

J. A. S. XIII. 736—*Gajra*, Sindh.

Small Water-hen.

Descr.—Similar to *G. chloropus*, or intermediate to it and *Porzana akool;* the head and neck are like those of the common Water-hen, but the frontal plate is small or wanting; the outer web of the 1st primary is white, and the outermost feather of the winglet is also bordered with white; the wing-coverts are dark slaty ash; and the under tail-coverts are white. It is smaller than *G. chloropus;* extent 18 inches; tarsus $2\frac{1}{8}$; mid-toe $2\frac{5}{8}$; claws also shorter; irides bright pale crimson; legs and feet as in *chloropus*, but the orange garter less developed.

This species was discriminated by Mr. Blyth from a drawing and some fragments of a specimen sent by Sir A. Burnes, from the Munchur lake in Sindh. It appears to me rather a doubtful species, but I shall retain it in the hopes of other specimens turning up.

The next species (with one or two other allied ones) differs slightly in type and habits, and has been separated as *Erythra*, Reichenbach.

907. **Gallinula phœnicura**, PENNANT.

Rallus, apud PENNANT—BLYTH, Cat. 1661—JERDON, Cat. 333—SYKES, Cat. 202—G. Javanica, HORSFIELD, Zool. Res. Java, pl.—*Dawak*, or *Dahak*, or *Dauk*, H.—*Boli-kodi*, Tel.—*Kureyn* of Gonds—*Kurayi*, in Sindh.

THE WHITE-BREASTED WATER-HEN.

Descr.—Above black with greenish reflections especially on the wing-coverts; chin, throat, and breast pure white; lower abdomen, vent, and under tail-coverts deep chesnut.

Bill greenish yellow, orange on the ridge; irides blood-red; legs green. Length 12¾ inches; extent 21; wing 6½; tail 2½; bill at front 1½; tarsus 2½; mid-toe and claw 2⅝.

The White-breasted Water-hen which is placed by Blyth, as a *Porzana*, is quite intermediate to the Gallinules and Rails; but its size and mode of coloration ally it more closely to the former than to the latter. Unlike the others of its kind, however, this species prefers thickets, hedge-rows, and patches of thick jungle, often at some distance from water; and it is often seen in gardens and close to villages. It comes out into fields, gardens, &c., to feed, and when approached runs to its covert, with great rapidity and erect tail; it climbs with facility through the thick shrubs and reeds, and is dislodged with difficulty. Near villages it is often very tame. It feeds both on grain and insects, and has a loud call.

Theobald found the nest, in a jheel, made of weeds, containing seven eggs of a brownish-cream colour, spotted and blotched with brownish red. It is found throughout India and Ceylon, extending through Burmah into the Malayan isles.

Three or four species of this genus are recorded, all from the Eastern Archipelago. Gray admits three other genera of Gallinules, *Limnocorax*, *Amaurornis*, and *Porphyriops*, the latter remarkable for its thick bill; *Habroptila*, from Africa, is also closely allied. *Ocydromus*, Wagler, (*Gallirallus*, Lafr.) an Australian group, is

placed by Gray among the true Rails, but appears to approach the Water-hens more nearly, and Bonaparte makes it the type of a separate family, in which he places *Tribonyx*, Dubus, (*Brachyptrallus*, Lafr.), which appears to me to be simply a gigantic Water-hen. Not far from the Coots and Gallinules should be placed the remarkable genus, *Podoa*, Illiger, (*Heliornis*, Gray) with the closely allied *Podica*, Gray. The birds composing this group have the toes lengthened and webbed like the Coots, or rather like *Podiceps;* a long neck and a Rail-like bill. They were formerly classed with the Grebes, but the skeleton is quite that of the present family. There is one American species, *Podica surinamensis ;* another from Africa, *Podica Senegalensis;* and a third *Podica personata*, Gray, from Burmah and Malacca, extending into Cachar, where I saw a specimen that had been killed by Dr. White. This bird will probably be found to extend so far west as to demand a place among the Birds of India. The African species is said to have a peculiar growling note.

Sub-fam. RALLINÆ.

Base of the bill not prolonged over the forehead; beak much compressed; feet somewhat shorter than in the Gallinules; body still more compressed.

The Rails are for the most part birds of small or moderate size, and more or less brown plumage, occasionally streaked, and often banded beneath, frequenting thick corn-fields, inundated rice-fields, swamps, marshes, and wet meadow land. They are partially nocturnal in their habits, shun observation, and feed much on small molluscs, insects, and their larvæ, occasionally on grain and vegetable matter. They have the body more compressed than the Gallinules, the sternum being very narrow, and this enables them to make their way with facility through the densest reeds and herbage. They swim with ease, but take wing unwillingly and fly badly. The plumage is soft and loose, and the wings have generally a short spur or tubercle at the flexure. They are for the most part solitary, whilst the Gallinules are more or less social. They hang their legs on first taking wing, and during short flights. The sexes are alike in colour, or nearly so.

Gen. PORZANA, Vieillot.

Syn. *Ortygometra* and *Zapornia.*

Bill about the length of the head, compressed throughout, moderately slender, very slightly deeper at the base, and somewhat narrowed in the middle; wings moderate, rounded; tail very short; tarsus moderate; toes rather long, slender, smooth; claws compressed, sharp.

The birds of this genus frequent marshy ground, are mostly solitary birds, and are very difficult to flush. The first by its plumage, forms a sort of link with the Water-hens, and has been badly placed by Bonaparte with the group named *Hypotæniidia.*

908. **Porzana akool**, SYKES.

Gallinula, apud SYKES, Cat. 203—BLYTH, Cat. 1662—G. modesta, SWAINSON.

THE BROWN-RAIL.

Descr.—Above olive brown, ashy brown on the rump; wings and tail dusky; wing-coverts deep brown; chin white; throat, breast, and belly ashy-brown; flanks olive-brown; lower tail-coverts deep brown.

Bill greenish; irides red-brown; legs and feet fleshy brown or livid purple. Length 11 inches; wing 7; tail $3\frac{1}{2}$; bill at front $1\frac{3}{4}$; tarsus 2.

This is comparatively a rare bird in most parts of the country, although it appears generally distributed. It has been found in the Deccan, in Central India, and is rather common in Lower Bengal. It frequents grassy swamps, and the edges of tanks and rivers, runs well, and is flushed with difficulty.

Porz. immaculata, Swainson, from Australia, is a similarly coloured species, but much smaller.

The next group comprises several small Rails of more or less spotted plumage, spread through the temperate regions of the Old World, migrating in winter to tropical countries.

909. **Porzana maruetta**, BRISSON.

Rallus, apud BRISSON—BLYTH, Cat. 1663—JERDON, Suppl. Cat. 330 bis—GOULD, Birds of Europe, pl. 343—Rall. porzana, LINN.—*Khairi*, Beng. or *Gurguri khairi*—*Venna mudi-kodi*, Tel.

THE SPOTTED RAIL.

Descr.—Crown, back, scapulars, and rump olive brown, blotched with dusky, and all the feathers except those of the head elegantly spotted and streaked with white; forehead and eyestreak ash-grey, the latter speckled with white; nape thickly spotted with black and white; cheeks cinereous, speckled with black; wing-coverts olive brown, sparingly spotted with white; quills brown; throat ashy grey; fore part of the neck and breast pale olivaceous, tinged with ashy grey and spotted with white; belly and vent ashy white; flanks with transverse bars of white, black, and olivaceous brown.

Bill greenish yellow, orange at the base; irides red brown; legs and feet bright yellowish green. Length 9 inches; extent 15¼; wing 4½; tail 2; bill at front ¾; tarsus 1$\frac{4}{10}$; middle toe and claw 1$\frac{6}{10}$.

The spotted Rail of England is found over all India, in the cold season, and frequents marshes, rice fields, and moist meadows near rivers and tanks. It is found throughout Europe, Asia, and Africa, breeding in temperate regions; it is stated to make a floating nest of rushes, and to lay eight to twelve reddish-white eggs spotted with brown. It becomes very fat at certain seasons, and is said to be excellent eating.

The smaller Rails have been separated as *Zapornia*, Leach.

910. **Porzana pygmæa**, NAUMANN.

Crex, apud NAUMANN—BLYTH, Cat. 1664—Gallin. Bailloni, VIEILLOT—GOULD, Birds of Europe, pl. 344.

THE PIGMY RAIL.

Descr.—Crown and neck above wood-brown; back, scapulars, and wing-coverts yellow-brown, tinged with olive, and with numerous white, black-edged, irregular spots; cheeks, throat, neck and under parts bluish grey, the sides of the abdomen and under tail-coverts black with white cross-bars.

Bill dark green; irides reddish; legs and feet fleshy brown. Length 7 to 7¼ inches; extent 12; wing 3$\frac{1}{10}$; tail 1$\frac{3}{10}$; bill at front ⅝; tarsus 1; middle toe and claw 1½.

The female is said to be a little brighter in plumage, and the young to have the upper parts less spotted, and the lower parts whitish with cross bands.

The Pigmy Rail is still more common than the last species, frequents similar places, and has a like geographical distribution. I have killed it in every part of the country, chiefly in the cold season; some pairs however, may breed in this country, as I have killed it in Eastern Bengal in May.

The next two species are classed under *Rallina*, (*Euryzona* of Reichenbach) from which the first of them differs in having longer toes and also in its mode of coloration, not being banded beneath; it ought perhaps to be placed apart.

911. **Porzana fusca**, Linnæus.

Rallus, apud Linnæus—Blyth, Cat. 1666—Gall. rubiginosa, Temm., Pl. Col. 387.

The Ruddy Rail.

Forehead, cheeks, and sides of the head, neck, throat, breast, and abdomen, deep ferruginous, albescent on the chin and throat; upper plumage dull olive brown, darker on the wings and tail; lower abdomen, vent, and under tail-coverts dark olivaceous, with white bars.

Bill green, reddish at the base; irides red; legs and feet pale green. Length 7½ inches; wing 3¾; tail 1½; bill at front ¾; tarsus 1½; mid-toe and claw 1½.

This is a miniature of the next species, but with less banded plumage, and longer toes.

The Ruddy Rail is found throughout India, is not very common in the South, but more abundant in the North, especially in the well watered province of Bengal. It frequents thick swamps, marshes, and the like, but cannot be said to be common anywhere. It extends through Burmah to the islands of Malayana.

Gallinula erythrothorax, Tem. and Schleg., F. Japon., is somewhat allied to this species; it was found by Swinhoe at Canton.

The next species is clearly a *Rallina*, distinguished by the banded abdomen.

912. Porzana ceylonica, Gmelin.

Rallus, apud Gmelin—Blyth, Cat. 1668—Brown, Ill. Zool., pl. 37—Gall. euryzonoides, Lesson?

The Banded Rail.

Descr.—Whole head, neck and breast bright ferruginous-chesnut, albescent on the chin; upper plumage dull olivaceous; wing-coverts slightly tinged with chesnut; quills brown, with a few whitish spots and bars internally; abdomen, vent, and under tail-coverts rich dark olive, banded broadly with white.

Bill green; irides red-brown; legs pale green. Length about 10 inches; wings $5\frac{1}{8}$; tail $2\frac{1}{8}$; bill nearly 1; tarsus $1\frac{5}{8}$; mid-toe and claw $1\frac{1}{2}$.

Latterly Mr. Blyth separated the race from Northern India under the name of *P. amauroptera*, distinguished by having less rufous on the nape, and by having the wings and tail brown, barely tinged with rufous.

The Banded Rail resembles the last species in haunts, habits, and distribution in India. It appears to be replaced in the greater part of Malayana by the more richly-plumaged *P. fasciata*, Raffles, (*euryzona*, Temm.); but Mr. Blyth writes me that a race barely distinguishable from *ceylonica* is found in the Philippines.

Another beautiful species has been lately sent from the Andamans by Col. Tytler, and named by him *Euryzona Canningi*. It is deep bright ferruginous above, banded beneath, and much larger than *ceylonica*. *Rallina tricolor*, Gray, from New Guinea, is also somewhat allied to this group, and there are many others scattered through the Malayan islands, and especially throughout Oceanica and the Pacific islands.

Gen. Rallus, Linnæus (as restricted.)

Bill more lengthened, straight, or slightly curved down at the tip, slender, grooved for two-thirds of its length; nostrils linear; wings with the 1st quill much shorter than the 2nd and 3rd, and a small spur on the shoulder; tarsus and toes as in *Porzana*. The feathers of the forehead somewhat spiny.

The Water-rails differ from the last group chiefly by their more lengthened bills. They are divisible however into two groups.

1*st*.—With shorter bills,—*Hypotænidia*, Reichenbach.

913. Rallus striatus, Linnæus.

Blyth, Cat. 1671—Jerdon, Cat. 330—R. gularis, Horsfield—*Wade-kodi*, Tel.

The blue-breasted Rail.

Descr.—Top of head and hind neck dark chesnut; upper plumage (including the quills and tail) olivaceous throughout, with narrow white, black-edged bars; beneath, the chin and throat whitish, the neck, breast, and upper abdomen bluish grey; the lower abdomen, vent, under tail-coverts, and thigh-coverts, dull olivaceous, with white bands.

Bill yellowish green; irides red; legs dull green. Length 10½ inches; wing 5¼; tail 1⅝; bill at front 1½; tarsus 1½; mid-toe 1¾.

The young want the ferruginous head and the bluish breast.

The Blue-breasted Rail is found throughout India, from the extreme South and Ceylon, to the foot of the Himalayas and the Punjab, especially in the cold weather. It frequents marshes and grassy ground by the sides of tanks and rivers, and is most abundant in well-watered districts: it is rare in the Carnatic and Deccan. It extends through Burmah to the Malayan islands. It probably breeds in the well-watered districts of Bengal, &c.; I found its nest in a swamp below Rangoon, containing six eggs, reddish cream colour with dark red and brown spots.

To this group belong several species chiefly from the Eastern islands and the Oceanic region; *R. pectoralis*, Cuvier; *R. Philippensis*, Latham, &c. *R. Lewinii*, Swainson, from Australia, is also nearly allied, and is made the type of *Lewinia* by Bonaparte.

2*nd*.—With longer bills,—(*Rallus*, as restricted).

914. Rallus indicus, Blyth.

J. A. S. XVIII., p. 820—Blyth, Cat. 1673.

The Indian Water-rail.

Descr.—Above olive brown, with black central streaks; a dark streak below the eye, continued back over the ear-coverts; lesser

coverts with a few white marks; throat whitish; cheeks, fore-neck, breast, and upper abdomen brownish ashy; lower belly reddish brown; flanks black with white bands; lower tail-coverts mixed white rufous and black; quills and tail dusky brown, the feathers of the last edged paler.

Bill dull red, dusky on the culmen and tip; irides red brown; legs and feet dirty pale green. Length 10½ inches; extent 15; wing 4½ to 5; tail 2; tarsus 1¾; bill at front 1½; depth nearly ½.

This Water-rail differs, according to Mr. Blyth, from *R. aquaticus* of Europe, which it otherwise very closely resembles, in being larger, with a conspicuously thicker bill and legs: the dark streak below the eye, and the less pure hue of the lower parts are also mentioned as distinctions by that Naturalist. I am doubtful of its being perfectly distinct, but shall retain it as a separate species for the present.

It appears to be rather a rare bird in Central and Southern India, and has chiefly been found during the cold season, being probably migratory like some of the other Rails. It frequents marshy ground, generally in rather thick covert. I have only seen it myself in Northern India, and Adams states that it is common in the Punjab. Its distribution elsewhere is not recorded, but it probably (if distinct) will be found to occur throughout China and North-eastern Asia. Schlegel has *R. japonicus*, given as a variety of *aquaticus* by Bonaparte, which is not improbably, the same as our bird.

Rallus aquaticus, Lin., is found throughout Europe and the greater part of Asia, and there are many other true Water-rails in different parts of the world, especially in America. Two groups from the New Continent are named *Rufirallus* and *Laterirallus* by Bonaparte.

A group of small African Rails appears to deserve separation, and has received from Swainson the generic name of *Corethrura*. The birds of this genus have very short tails. *Rougetius*, Bonaparte, constitutes another African group. The Land-rail of Europe, or Corn-crane, *Crex pratensis*, is a very distinct type, well known (by its call at all events) in Britain. It is stated to have occurred in Northern India, and is common in Affghanistan. A very distinct

type of Rail exists in *Eulabeornis*, Gould, from Australia, of large size, with short legs and feet, and a longish, pointed or wedged tail. It is stated to have some affinities for *Megapodius*. *Aramus*, V., an American group, placed by some with the Herons, and by others between the Cranes and the Herons, has been lately referred to this family from its mode of nidification and the nature of its eggs. *Aramus scolopaceus* is a large bird with brown plumage. An allied form is *Aramides*, Puch., founded on *Rallus cayennensis*, Gmelin.

Tribe CULTIROSTRES, Cuvier.

Gradatores, Blyth, (Stalkers).

Bill thick, stout, pointed, slightly curved in some; tarsus elongated; feet moderately large; hind toe large, on the same plane as the anterior toes; wings ample; tail short. Mostly of large or moderate size. Nestle on trees or among reeds.

This tribe differs from all the preceding tribes of the *Grallatores* in the young being born naked or nearly so, and helpless, requiring to be fed by their parents in the nest till nearly full grown. It comprises three families, the Storks, the Herons, and the Ibises.

They all stalk slowly along the ground, or in water, looking for their food, which consists of fishes, reptiles, insects, crustacea, and molluscs; their flight is powerful and easy, though slow in some. A few are migratory and gregarious. The tibia is bare for a considerable space; the tarsus long and scutellated; the hind toe long and on the same plane or nearly so with the anterior toes. The sternum is short and wide, with one short fissure narrowing upwards; the internal anatomy varies somewhat in each family.

They are divided into the following families:—

Fam. *Ciconidæ*, Storks; Fam. *Ardeidæ*, Herons; and Fam. *Tantalidæ*, Ibises. The Storks have the bill very stout and thick, and are of large size. The Herons have the bill more slender and pointed, with the middle toe more or less serrated; and the Ibises have the beak more or less curved.

Cuvier placed the Cranes among the *Cultirostres*, but I have already given reasons for separating them.

Fam. CICONIDÆ, Storks.

Ciconinæ, Gray, Blyth.

Bill very large and stout, lengthened, straight, or slightly ascending, and with the lower mandible sub-recurved, smooth, without a groove, less cleft than in the Herons; nostrils linear, near the base of the culmen; wings long, 2nd and 3rd, or 3rd and 4th quills longest; tail short; tarsus usually reticulate with hexagonal scales; all the anterior toes joined at the base by membrane; hallux resting on the ground for part of its length; claws blunt. Of large size.

The Storks differ from the Herons in many points, but they may be readily distinguished by their large size, bulky form, stouter and smoother bill, and by always having a web between the inner and middle toes, as well as the outer web. They have a rather muscular gizzard, moderately long intestines, and two minute cœca. Their lower larynx has no proper muscles, and they consequently emit no sound except by striking the mandibles together. The Storks have a peculiar mechanism of the knee joint, by which they are enabled to rest on one leg without fatigue. The sternum is short and wide, with only one emargination, narrowing upwards.

Some of the Storks are migratory and gregarious, others solitary. They breed on lofty trees or on house-tops, and lay two to four whitish eggs.

The first genus contains some of the Giants of the Bird Kingdom.

Gen. LEPTOPTILOS, Lesson.

Syn. *Argala*, Leach.—*Osteorophea*, Hodgson.

Char.—Bill enormous, much thickened; head more or less nude; wing-coverts long, broad; under tail-coverts long, soft, somewhat decomposed. Of very large size.

The gigantic Storks, or Adjutants as they are called in India, are found in the hotter regions of the Old World. They devour carrion of all kinds, as well as fish, reptiles, crustacea, &c., and serve the purpose of Scavengers in some of our large cities. Some have a large pouch in front.

There are two species in India.

915. Leptoptilos argala, Linnæus.

Ardea, apud Linnæus—Blyth, Cat. 1632—Sykes, Cat. 185—C. nudifrons, Jerdon, Cat. 316—C. marabou, Temminck—Pl. Enl. 300—Argala migratoria, Hodgson—Ardea dubia, Gmelin—*Hargila* or *Hargeyla*, H.—*Dusta*, H., in the South—*Chaniari dhauk*, Beng.—*Garur* in Purneah and N. W. P.—*Pinigala-konga*, Tel.—*Adjutant* of Europeans.

The Gigantic Stork.

Descr.—Adult in breeding plumage; whole head, neck, and gular pouch bare, with a very few scattered short hairs, yellowish red mixed with fleshy, and varying much in tint in different individuals; a ruff of white feathers bordering the upper part of the back, lengthened, and somewhat loose in texture on the shoulders; upper plumage, including the lesser and median wing-coverts, slaty black, ashy or slaty in fresh moulted birds, with a slight green gloss; the greater-coverts silvery grey; primaries and secondaries black, slightly glossed externally; tertiaries silvery grey, gradually passing into the greater coverts, and with them forming one long conspicuous wing-band; two or three of the innermost feathers slightly decomposed in structure; scapulars with a tinge of grey; lower plumage white.

In non-breeding plumage the silvery grey wing-band is wanting, the whole plumage is more dull, and the nude skin of the head and neck less mixed with red.

Bill pale dirty greenish; irides very small, greyish white; legs greyish white. Length 5 feet; wing 30 inches; tail 11; bill at front 12; tarsus 10½; mid-toe 5. The males exceed the females in size.

The pouch is sometimes 16 inches and more in length. It has no connection with the gullet, but is probably connected with the respiratory system of the bird; and, as Mr. Blyth suggests, is probably analogous to the air-cell attached to one lung only of the Python or Boa, and, as in that case, no doubt, supplies oxygen to the lungs during protracted acts of deglutition. It appears to increase in size with the age of the bird.

The Adjutant is found throughout the greater part of India, is rare in the South, but extremely common in part of Northern India, and more especially in Bengal and North-eastern India. I never saw it in the Carnatic nor in Malabar; it is occasionally met with in Mysore, and is not rare in Hyderabad, thence becoming more common and abundant northwards. It spreads through Burmah to the Malayan peninsula. It is only a temporary resident in India, coming in towards the close of the hot weather in April or May, and remaining till October. A very few barren or unpaired birds remain occasionally in parts of the country.

In Calcutta, and some other large towns, the Adjutant is a familiar bird, unscared by the near approach of man or dog, and protected in some cases by law. It is an efficient Scavenger, attending the neighbourhood of slaughter-houses, and especially the burning grounds of the Hindoos, where the often half-burnt carcasses are thrown into the rivers. It also diligently looks over the heaps of refuse and offal thrown out in the streets to await the arrival of the scavenger's carts, where it may be seen in company with dogs, kites, and crows. It likes to vary its food, however, and may often be seen searching ditches, pools of water, and tanks, for frogs or fish. In the Deccan it soars at an immense height in the air along with Vultures, ready to descend on any carcass that may be discovered. After it has satisfied the cravings of its appetite, the Adjutant reposes during the heat of the day, sometimes on the tops of houses, now and then on trees, and frequently on the ground, resting often on the whole leg (tarsus). The Adjutant occasionally may seize a Crow or a Myna, or even, as related, a small cat; but these are rare bits for it, and indeed it has not the opportunity, in general, of indulging its taste for living birds, notwithstanding Cuvier's statement that its large beak enables it to capture birds on the wing. A writer in *Chambers' Journal* for 1861, describes an Adjutant swallowing a Crow, and states that he 'saw it pass into the sienna-toned pouch of the gaunt avenger. He who writes saw it done.' Again, 'the Adjutant's cry very much resembles water flowing from a narrow-necked bottle, and he invariably utters it when about to swallow a piece of offal.' These utterly unfounded statements called up

Mr. Blyth in the Ibis, vol. 3, p. 268, who showed that both the passing of the Crow into the pouch and the call of the Adjutant were simply impossible, in consequence of structural peculiarities which have been described in previous pages.

The Adjutant breeds in trees on rocky cliffs, occasionally, it is said, in lofty trees away from hills. The neighbourhood of Moulmein is one of the best known localities; the nests were found by Colonel Tickell on trees near the summit of some of the remarkable limestone rocky hills near that place. Captain Sparks had previously found the nest in the same locality; and Mr. Frith found them breeding in the south-east part of the Sunderbuns. The Adjutant lays two white eggs, and the young are covered with white down.

The feathers known as Marabou, or Comercolly feathers, and sold in Calcutta, are the under tail-coverts of this and the following species. There is a popular superstition that if you split the head of this bird before death, you will extract from it the celebrated stone called *Zahir-mora*, or poison killer, of great virtue and repute as an antidote to all kinds of poison.

916. **Leptoptilos javanica**, HORSFIELD.

Ciconia, apud HORSFIED—BLYTH, Cat. 1633—C. calva, JERDON, Cat. 318—C. capillata, TEMMINCK, Pl. Col. 312—C. nudifrons, and C. cristata, MCCLELLAND—A. crinita, BUCH. HAMILTON, Mss.—Argala immigratoria, HODGSON—*Madanchur* also *Modun-tiki*, Beng.—*Chinjara*, H.—*Chandana* in some parts—*Chandiari* in Bhagulpore—*Bang-gor* in Purneah—*Dodal-konga*, and *Dodal gatti-gadu*, Tel.—*Small Adjutant* of Europeans.

THE HAIR-CRESTED STORK.

Descr.—Top of the head entirely bald, horny; the rest of the head, face and neck bare, with a few longish hair-like feathers on the occiput; the face and the rest of the neck more or less thickly covered with hairs, some long, others short, collected into a thin mane on the back of the neck, and a small tuft on the lower

part of the neck; a large white neck-ruff covering the sides of the neck and breast; plumage above glossy greenish black, all the body feathers and the lesser wing-coverts faintly barred with several narrow bars; scapulars, the uppermost tertiaries, and the last of the greater coverts more brightly green, glossed and edged with white; plumage beneath white.

Bill dirty yellowish; bare top of head dirty green; nude, face, and neck much tinged with yellow, and at seasons with red; irides whitish; legs dusky black. Length 4½ feet; wing 26 inches; tail 10 to 11; bill 10; tarsus 9½; mid-toe 4½.

This species of Adjutant is found in small numbers throughout India, frequenting marshes, inundated paddy fields, and the edges of lakes and rivers. It prefers a wooded country, and in the South of India, I have only seen it on the Malabar Coast. It is rare in Central India and the Upper Provinces, is now and then found in Lower Bengal, and is more common in Assam, Sylhet, and Burmah, extending thence through the Malayan Peninsula to some of the islands. It feeds on fish, frogs, and more especially crabs, and also on large locusts. Buchanan found it breeding in a large Mango tope in the Purneah district; the nests very small and rude. Its Bengalee name of *Modun-tiki* is applied to it ironically, from its ugly head and neck, the expression meaning that the hair of its head is as beautiful as that of Modun, one of the sons of Krishna.

L. crumenifera, Cuvier, (*marabou*, Vigors, *argala*, Temm.) occurs throughout Africa.

Gen. Mycteria, Linnæus.

Char.—Bill very long, stout, solid, compressed, slightly ascending to the tip; tarsus much elongated. Of large size.

The *Jabirus*, as they are sometimes called in works of Natural History from an American species, are beautiful black and white Storks, with lengthened, slightly upturned bills. Some have the head and neck bare, others, among which is the Indian species, have the head well clad. Bonaparte sub-divides them, placing the Indian and Australian species under *Xenorhynchus*, in which there is no frontal membranous shield, and the head and neck are densely feathered.

917. **Mycteria australis**, Shaw.

Blyth, Cat. 1628—Jerdon, Cat. 319—Hardwicke, Ill. Ind. Zool. pl.—Ardea indica, Latham—*Banaras* and *Loharjung*, H.—*Ram-salik*, Beng.

The Black-necked Stork.

Descr.—Head and neck rich dark glossy green, beautifully glossed with purple on the hind-head and occiput; middle and greater-coverts, scapulars, and a portion of the interscapulars, tertiaries, and tail glossy green; the rest of the plumage pure white.

Bill deep black; irides brown; legs fine red. Length 52 to 56 inches; wing 23 to 24; tail 9; bill at front 11 to 13; tarsus 12 to 13; mid-toe 4½.

This gigantic-looking bird is found throughout India and Malayana, extending to Australia; it is rare in the South of the Peninsula, more common in Central India and Lower Bengal. It frequents the banks of rivers, lakes, small tanks, and jheels, and feeds on various water animals, fishes, frogs, crabs, and molluscs. It is a permanent resident, but I have not seen its nest. It is said that a very good *Bhyri* will strike down this large bird.

The Australian species does not appear to differ, though Gould states that the lower part of the back is glossy green. Schomburg states of an American species, *M. americana*, that it lives on the animal of a species of *Ampullaria*. Notwithstanding, says he, their unshapely beak, they are able to remove the operculum most admirably, and to draw the animal out of its shell. This I can the more readily give credit to, as it is the habit of another cultirostral genus, *Anastomus*. It is said to build on trees, rarely on rocks, and to lay two white eggs. This bird is classed by Bonaparte as restricted *Mycteria*, having the bill very large, and the head and neck naked.

The African *Jabiru* is separated as *Ephippiorhynchus*, Bonap., having the gonys of the lower mandible strongly ascending, a triangular membranous frontal shield, and a fleshy lappet at the angle of the mouth.

P

Gen. CICONIA, Linnæus.

Char.—Bill straight, moderately robust, acute, upper mandible convex above, lower mandible inclining a little upwards at the tip; nostrils pierced in the horny substance of the bill; orbits more or less naked; tarsi long, a considerable part of the tibia nude; wings moderate, ample, 3rd and 4th quills longest; toes strongly webbed at the base; hind toe moderately long; claws short, depressed, blunt, not pectinated.

The true Storks are birds of partially aquatic habits, some even preferring large open plains; they feed on insects, reptiles, fish, and crustacea, to capture which they keep their mandibles open in the water, and seize everything passing with unerring grasp. Of the three species found in India, the first is nearly of black colour throughout, and has been separated as *Melanopelargus*, Reichenbach.

918. Ciconia nigra, LINNÆUS.

BLYTH, Cat. 1630—JERDON, Cat. 315—GOULD, Birds of Europe, pl. 284—*Surmai*, H.

THE BLACK STORK.

Descr.—Whole plumage deep blackish brown, with violet, purple, and green reflections, except the lower part of the breast and the abdomen, which are pure white.

Bill blood red; irides dark brown; legs dark red. Length 3½ feet; extent 6 feet; bill at front nearly 8 inches; tarsus 8; wing 24; tail 10.

The Black Stork is rare in India. I have seen it occasionally, and killed it in the Deccan, and also near Saugor in Central India; it has been sent from the Dehra Doon to the Museum of the Asiatic Society, and is probably not very rare in the Punjab. It frequents secluded wooded streams, rivers, and lakes, and lives chiefly on aquatic food. It is considered one of the finest quarries for the *Bhyri*, and the day that a Black Stork is killed is marked by the Indian falconer with a white stone.

The Black Stork is only a winter visitant to India, it is found throughout the greater part of Asia, Europe, and Africa. It is

said to build on the loftiest pine-trees in secluded spots, and to lay two dirty white eggs.

The next form is that of the well-known White Stork of Europe, and is retained by Bonaparte as restricted *Ciconia*, having the orbits feathered, and shortish toes.

919. Ciconia alba, Belon.

Ardea ciconia, Linnæus—Blyth, Cat. 1629—Jerdon, Cat. 313—Gould, Birds of Europe, pl. 283—*Lag-lag*, H., also *Ujli*; *i. e.*, the *white bird*, as opposed to the last species, also *Haji lag-lag* —*Dhak* in N. W. P.—*Wadume konga*, Tel.

The White Stork.

Descr.—Head, neck, and all the body pure white; greater-coverts, scapulars, and quills black.

Bill fine blood red; irides brown; naked orbits black; legs red. Length 3½ feet; extent 6½ feet; wing 24 inches; tail 10; bill at front 7½; tarsus 8½.

The White Stork is abundant in the Deccan, the West of Central India, and the N. W. Provinces, rare in the South of India, and unknown in Bengal, or in any of the countries to the Eastwards. It is only a cold weather visitant, coming in October, and departing by the end of March. It frequents extensive open grassy plains, with or without bushes, associates in large flocks, and feeds on grasshoppers, lizards, snakes, centipedes, &c. Occasionally it betakes itself to some tank or river in the middle of the day. From the open country it frequents, it is well adapted for being hawked, and it is accordingly a common and favorite quarry for a good *Bhyri*. It is the most gregarious of all the Storks, and immense flocks are sometimes seen.

This Stork is an inhabitant of all Asia, Europe, and Africa, and breeds, as is well known, on the tops of houses and chimneys, occasionally in trees, making a large nest of sticks, and laying three or four buffy white eggs. The same birds return year after year to their old nest, and are welcomed and protected by the inhabitants of Holland and other countries. The name *Lag-lag* is correctly applied to this species by all falconers, and I see that it is the *Leglek* of the Bucharian Tartars, according to Pallas.

Another White Stork is *C. maguari*, Gmel., (*Jabiru*, Spix.) from South America, stated, but erroneously, to have occurred in Europe, and figured as such by Gould, in his Birds of Europe, pl. 285.

The next form is a somewhat peculiar one. It has the upper tail-coverts disposed like the tail of a Drongo, the outermost feathers long, the median short, and these feathers being of stiff texture, give it the appearance of having a double tail. The forehead is nude, and the orbital skin is continued a short way beyond the ear. In its habits it may be said to be intermediate between *C. nigra* and *C. alba*. (*Diplura, or Diplocercus*, Blyth.)

920. Ciconia leucocephala, Gmelin.

Ardea, apud Gmelin—Pl. Enl. 906. Blyth, Cat. 1631—Sykes, Cat. 184—Jerdon, Cat. 314—*Manik-jor*, H.—*Kali*, of falconers in the South of India—said to be called *Lug-lug* in Hindostan—*Kandesur or Kowrow*, Mahr.—*Sanku-budi-konga*, Tel.—

The White-necked Stork.

Descr.—Top of the head black, the whole neck white, the rest of the body black, beautifully glossed with purple on the back of neck, upper back and breast, and upper part of abdomen; quills and upper tail-coverts glossed with green, as is part of the lower back; tail white.

Bill dusky, with a red tinge on the culmen, at the meeting of the mandibles, and on the lower mandible; the nude front, face, throat, and patch behind the ear dusky plumbeous; irides red; sclerotic black with an anterior patch of red, and a posterior one of yellow; tarsus dull red; naked skin of the ulna exposed, bright blood-red. Length 36 to 37 inches; extent 68; wing 20; tail 7; bill at front 6; tarsus 7.

The White-necked Stork frequents alike open plains, ploughed lands, fields, and the edges of lakes, jheels, and rivers; its food consists of beetles, grasshoppers, lizards, crabs, and molluscs, with aquatic insects. It is found throughout all India, very abundantly in well-watered districts; it spreads through Burmah to the

islands; and is said to be found also in Africa. It breeds on high trees, making a large nest of sticks, and laying two to four white eggs, from March to June or July. The flesh is somewhat coarse in texture, but is said to be palatable enough when cooked as a steak, hence this Stork is sometimes called the Beefsteak bird by Europeans in Bengal. The name *Manik-jor* means the companion of Manik, a Saint, and some Mussulmans in consequence abstain from eating it.

Another Stork from Africa, *Cic. Abdimii*, Licht., figured in Rüppell's Atlas, pl. 8, is made the type of *Abdimia* by Bonaparte. It chiefly differs from the last species in having the neck purple instead of white.

Fam. Ardeidæ, Herons.

Bill typically more slender than in the Storks, very sharp, deeply cleft; legs long, scutellated; toes long, slender; outer toe only joined by web to the middle one; hind toe long, on the same plane as the others; middle toe with the inner edge of the claw dilated and pectinated; nostrils narrow, at the basal extremity of a long furrow.

The Herons vary in size from that of a Stork to a Rail, and the most typical have long legs, a long neck, and a considerable portion of the tibia bare. They are for the most part solitary when feeding, but many roost together; and they habitually breed in society, the majority on trees, a few among thick reeds. The eggs are from four to six in number, very pale blue or greenish. The young are helpless, and are fed by their parents till nearly full-grown. The sexes are alike or nearly so, the female being generally smaller, and with shorter crests or plumes. They usually watch for their prey, moving slowly about; and when unsuccessful, flying off to a fresh bit of water. They feed chiefly on fish, also on crabs, frogs, and a few on insects, which they seek for on land, among cattle. They rarely run, but fly with ease, though not very fast.

Their sternum is like that of the Storks. They have 17 cervical vertebræ; the head can be bent down on the 1st vertebra; this on the second, and so on to the 6th; but this motion cannot be performed backwards. The stomach is a very large membranous

sac; the œsophagus is very wide; the intestines long and slender, with only one minute cæcum.

They have all several remarkable patches of dense down on the breast and groins, called Powder-down patches by Bartlett; these abound in a greasy powder which is secreted by the down, or rather consists of the abortive quill-shafts broken up. It is evidently used to render the feathers impervious to water, supplying the place, partly, of the oil-glands of other birds.

Gen. ARDEA, Linnæus, (as restricted.)

Char.—Bill elongate, straight, thick, compressed, pointed; the upper mandible with a groove from the nostrils, evanescent towards the tip; nostrils near the base narrow, longitudinal, partially concealed by membrane; wings moderately long, the 2nd, 3rd, and 4th quills usually sub-equal and longest; tail short, even; tarsus lengthened, usually scutellate in front; toes long; outer toe connected to the middle one by a web; claws long, that of the middle toe with the inner margin produced, and pectinated. Of large size, usually grey above, with the neck moderately long and slender, and the feathers of the lower neck and breast lengthened and pendent.

The first is a bird of rare occurrence, and of gigantic size; it has been separated by Bonaparte as *Ardeomega*. It has the bill very stout, straight, slightly turned up towards the point.

921. Ardea goliath, TEMMINCK.

TEMM., Pl. Col. 474?—RÜPPELL, Faun. Abyss. pl. 26?—A. nobilis, BLYTH—BLYTH, Cat. 1634—*Darria anjan*, Beng.

THE GIANT HERON.

Descr.—The adult bird has the upper plumage dark blue grey; top of the head (with short occipital crest) dark brown; sides of the head, with the whole neck, chesnut brown, darker posteriorly; chin and throat white; neck in front white with black streaks; breast and abdomen dark chesnut brown.

The young bird is dull grey above, the top of the head, ear-coverts, and the back of the neck, pale rufous cinnamon colored,

with an occipital crest of dense feathers; the scapulars varied with brown, and with a white centre; throat white; neck whitish with some dusky marks, and blackish posteriorly; the rest of the lower parts whitish, the flanks margined with brown and ashy.

Bill dusky above, beneath and tip greenish; irides pale yellow; orbitar space greenish; legs blackish. Length nearly 5 feet; wing 24 inches; tail 10; bill at front 8; tarsus 9; middle toe 6¼; stands nearly 4 feet high.

The description of the adult plumage I have taken from Temminck, Pl. Col. 474, as it appears to be the same bird. I am doubtful if Rüppell's *A. goliath* be the same. It has the back and sides of the neck isabella yellow; the crest longer than in the Indian example, or in Temminck's figure, and brown; there is more white and less black on the neck and breast, and the lower parts are sepia brown. It is also smaller. Length 44 inches; wing 21; but the bill longer 8½. *A. typhon*, Temm., is considered identical with this species by some writers, but Bonaparte places that bird as the type of another group.

This huge Heron has been procured occasionally by Mr. Blyth, from the salt-water lake near Calcutta; I observed it once only, at the foot of the Khasia Hills, on the banks of a river. It is known as an inhabitant of some of the islands of the Malayan Archipelago, and if Rüppell's bird be identical, also of Africa.

The next species is placed by Bonaparte under *Typhon* of Reichenbach, distinguished by a long, straight bill, barely upturned at the tip; a very long slender neck; the tibia nude for some distance; and long feet. It appears to approach the Purple Heron in habit.

922. Ardea Sumatrana, Raffles.

Blyth, Cat. 1635—A. rectirostris, Gould, Birds of Australia, VI. pl. 54—A. insignis, Hodgson—A. fusca, Blyth (the young)—*Anjan*, Beng.—*San barado*, Sindh, *i. e.*, the great Heron.

The dusky-grey Heron.

Descr.—General plumage dusky cinereous, more dusky on the crown of the head, with a crest of a few narrow, ashy feathers,

the longest about 7 or 8 inches; quills and tail dark slaty; the sides of the head and neck slightly tinged with rufous; the elongated breast plumes fine silvery-grey, edged with dusky at the base; the rest of the lower parts mingled ashy and rufous; scapulars elongated, lanceolate, tipped with silvery grey.

Bill dusky above, yellow at the gape and bottom of the lower mandible; feet dark greenish-grey. Length 46 inches; wing 19; tail 6½; bill at front 7; tarsus 7; middle toe and claw 4½. Stands a little more than 3 feet high.

The tertiaries, in the closed wing, are about equal to the primaries, and both are on a level with the tip of the tail. The young bird is pale vinous-brown above, the lower surface greyish-brown, the feathers of the lower neck and breast streaked with white.

This large Heron has been found in the North-eastern part of Bengal, in Nepal, the Sikim Terai, and Assam, and is more common in Arrakan, thence extending to Malayana, and even to Australia. I observed it between Dacca and Sylhet, but did not procure a specimen. A drawing, apparently of this species, is among those made by Sir A. Burnes in Sindh, and it may therefore be looked for in other parts of India, perhaps chiefly near the sea coast.

The type of this group is *Typhon robusta*, S. Müller, (*A. typhon*, Temminck; Pl. Cl. 475) from Timor, and some of the other Malayan isles, if indeed this be distinct from our bird.

The next group is that of restricted *Ardea*, in which the bill is nearly conical, and the birds of large size and grey plumage.

923. **Ardea cinerea**, Linnæus.

Blyth, Cat. 1636—Jerdon, Cat. 300—Sykes, Cat. 172—Gould, Birds of Europe, pl. 273—A. brag, Jacquemont, Atlas pl. —*Kabud*, H.—*Anjan*, and *Sada kanka*, Beng.—*Saa*, Sindh —*Khyra*, in Behar—*Narraina pachi*, Tel.—*Narrayan*, Tam.

The Blue Heron.

Descr.—Adult, forehead and crown pure white; occiput black, and a pendent crest of narrow, long, black feathers at the back of the head; neck white; back and wings fine bluish-grey; quills

black; scapulars silvery-grey, long and pointed, forming graceful plumes; tail bluish-ashy; forepart of the neck with longitudinal black spots, the feathers drooping down on the top of the breast, loose, and elongated, and forming a fine pectoral plume; lower breast and the rest of the under parts pure white.

Bill dark yellow, brown on the upper mandible; irides gamboge yellow; lores and naked orbitar skin greenish; legs and feet brown. Length 39 inches; extent 5½ feet; wing 18 inches; tail 8; bill at front 5; tarsus 5¾; middle toe and claw 4 to 4¾; hind toe 2½.

The young bird has the head and neck ashy, with dull dusky-grey streaks in front; the upper plumage tinged with brown; and the lengthened occipital feathers as well as the breast plumes absent.

The Heron of Europe is of general occurrence throughout India, frequenting rivers and the larger tanks. It breeds on high trees, several together, but not apparently in such numerous societies as it sometimes does in Europe; it feeds chiefly on fish. It is in India, as in Europe, a favorite quarry for the *Bhyri*, (*Falco peregrinus*) *vide* Vol. 1, p. 24.

This Heron is found throughout all Europe, Asia and Africa. *A. brag*, Is. Geoff., from Cashmere, figured in Jacquemont's Voyage, appears to be this same Heron; but Bonaparte makes it distinct, and states that Jacquemont's specimen had lately been found stowed away in the Paris Museum with Geoffroy's label attached, and the words "to be mounted immediately." The Prince states that it differs from *A. cineria* in being smaller, with the whole top of the head black, a long black crest, with two of the feathers much elongated, and the dorsal plumes dull and somewhat decomposed. Adams however mentions the common Heron as abundant in Cashmere, and states that the bird is preserved by its present Ruler on account of its feathers, which furnish the plumes for the turbans of the Royal Princes of Cashmere.

Other species of this group are *A. cocoi*, L., from America; *A. atricollis*, Wagler, from Africa; *A. leucophæa*, Gould, (very close indeed to *cinerea*); and *A. pacifica*, Latham, from Australia and Oceanica; the last differs from the other species in its coloration, being dark glossy green above, the head and neck white.

The next species has the form less robust, the neck longer and more slender, and the toes much lengthened, like those of the Bitterns, which it somewhat resembles in its habits, also; it certainly ought to form a separate sectional group.

924. Ardea purpurea, Linnæus.

Blyth, Cat. 1637—Jerdon, Cat. 301—Gould, Birds of Europe, pl. 274—*Nari*, H.—*Lal-kank*, Bengal,—*Pamula nari-gadu* Tel.—*Khyra* in Behar.

The Purple Heron.

Descr.—Adult in full plumage; crown and occipital crest black with green reflections; throat white; cheeks and sides of the neck reddish-brown, with three longitudinal narrow black bands, two lateral ones from the eyes to the breast, and the third, from the nape, down the back of the neck; neck in front, variegated with rufous-black and purple, the feathers on the top of the breast long and acuminated, purplish-white; back, wings, and tail, reddish-ash; the scapulars purple, long, and subulate, forming a brilliant plume on each side; breast and flanks deep brownish-red; belly and thigh-coverts the same, but paler and mixed with white.

Bill deep yellow, brownish above; orbitar skin greenish-yellow; irides yellow; tarsus reddish-brown, yellowish behind and on the soles of the feet. Length 36 to 42 inches; wing 15½; extent 58; tail 5¾; bill at front 5⅜; tarsus 5¼; middle toe 5½. Some birds are much smaller. The immature bird has the crest, the scapulars, and neck plumes deficient; the forehead black; the nape and cheeks pale rufous; the throat white; the forepart of the neck and the sides of the breast yellowish-white, with black spots; back, wings, and tail dusky-ash, the feathers edged with reddish-ash; lower parts whitish.

The purple Heron is very abundant in the well-watered districts of India, frequenting marshes, reedy ground, rice fields, and the like, but is rarely or never seen on the bare and open spots frequented by the common Heron. It may often be observed with its head and long neck just protuded above the grass, looking remarkably like the head of a snake, which has suggested its Telugu

name of *Snake Heron*. It rises with a loud harsh cry, which it repeats as it flies along, especially if it has been alarmed. Unlike most of the other Herons, this species breeds among lofty reeds; I have seen several of its breeding places, but the nests were quite inaccessible, and I have not procured its eggs. It feeds on fish, frogs, &c.

It is found throughout India and Ceylon, extending into Burmah and Malayana, and is spread throughout Europe, Asia, and Africa. Bonaparte separates the African bird as *A. Pharaonica*, stating it to be much larger.

Another species of this group is *A. herodias*, L., of America.

The next form is that of the White Herons, or Egrets.

Gen. HERODIAS, Boie.

Char.—Bill moderately long and slender, straight, and much compressed; plumage white; the neck very long and slender; tibia naked for nearly half its length; tarsus long, thin.

The Egrets are a natural group of Herons very abundant in India, and found in all quarters of the globe. They have the feathers of the back long and decomposed at the breeding season, in some crested, in others with the pectoral plumes elongated.

925. Herodias alba, LINNÆUS.

Ardea, apud LINNÆUS—BLYTH, Cat. 1638—JERDON, Cat. 302 and 303—SYKES, Cat. 169—A. egretta, TEMMINCK—GOULD, Birds of Europe, pl. 276—A. modesta, GRAY—HARDW., Ill. Ind. Zool. pl.—A. flavirostris, WAGLER—A. torra, BUCHANAN HAMILTON and FRANKLIN—A. syrmatophorus, GOULD, Birds of Australia VI., pl. 56?—*Mallang-bagla*, and *Torra-bagla*, H.—*Pedda tella konga*, Tel.—*Mala-konga* of the Gonds—*Dhar-bagla*, Beng.—*Bacho-barado*, Sindh.

THE LARGE EGRET.

Descr.—Plumage pure white; in the breeding season an elongated dorsal train of fine decomposed feathers, which pass the tail sometimes by 4 or 5 inches; no crest, nor breast plumes; bill black, quickly changing to yellow; naked skin round the eyes and at the base of the bill, pea-green, approaching to verditer; irides

pale yellow; naked part of tibia pale livid; tarsus black, more or less suffused with vinous-red. Length about 36 inches; extent 54; wing 15; tail 6½; bill at front 4¼; tarsus 6½; nude portion of tibia 5; middle toe and claw 4¼.

In winter, and for the greater part of the year, the dorsal train is wanting; the bill is deep yellow; the orbitar skin and base of bill wax-yellow, and the legs and feet black, yellowish on the soles and above the knee.

The large Egret is distributed throughout India to Ceylon, extending, if Gould's *syrmatophorus* be rightly identified with this species, from Europe through most of Asia and Africa to Australia. It is of course most abundant in the better watered districts, but is found everywhere, feeding in rivers and tanks, and roosting on trees. It breeds, in company, on trees, often in, or close to some village, making the usual nest of sticks, and laying three or four eggs of a bluish-green colour.

This species is said to make its nest in Europe, among reeds, but this is quite opposed to the habits of all the Egrets.

Bonaparte creates much confusion by separating the Egrets with yellow bills from those with black ones, not being aware that they change with the season; and he moreover separates *egretta* from *modesta*, giving Africa and the South of Europe as the locality of the former, and the South and East of Asia as the habitat of the latter.

926. H. egrettoides, Temminck.

Man. d' Orm. 2, p. 374—Ardea intermedia, Wagler—Blyth, Cat. 1639—A. flavirostris, Bonnaterre—A. nigrirostris, Gray, Hardwicke, Ill. Ind. Zool., pl.—A. putea, Buch. Hamilton, —H. plumifera, Gould, Birds of Australia, VI. 57—*Patangkha* or *Patokha bagla*, H.

The Smaller Egret.

Descr.—In summer, plumage pure white, like the last; a long dorsal train reaching nearly to the ground, and a beautiful long pectoral tuft of similarly formed feathers, but no crest.

Bill black; legs black; irides yellow; facial skin chrysoprase green. Length 27 to 28 inches; extent 46; wing 13; tail 5; bill at front $3\frac{1}{4}$; tarsus $4\frac{1}{2}$; middle toe and claw $3\frac{1}{2}$.

In winter, the dorsal and pectoral trains are wanting, and the bill is yellow.

This Egret is likewise found throughout India, is rarer towards the South, common in the North-east, and particularly abundant in Burmah and Malayana; it extends through Africa to Australia. Layard states that it is common in Ceylon. It has similar habits, nest, and eggs, to the last.

Bonaparte separates from *intermedia*, *plumifera*, Gould, from Australia; *flavirostris*, Temm., from Africa; and *egrettoides*, Temm., from Asia; but I agree with Blyth in uniting these. Other large Egrets, apparently distinct, are *A. leuce*, Illiger, (*Americana*, Andubon); and *A. occidentalis*, Audubon, raised to generic rank as *Audubonia*, Bonap., on account of its larger size, stout, little compressed bill, and robust form.

The next bird has been separated by Bonaparte as *Garzetta*, of smaller size, the bill more slender and less compressed.

927. Herodias garzetta, Linnæus.

Ardea, apud Linnæus—Blyth, Cat. 1640—Jerdon, Cat. 304—Skyes, Cat. 170—A. orientalis, Gray—Hardwicke, Ind. Zool, pl. 6—Gould, Birds of Europe, pl. 277—H. immaculata, Gould—*Kilchia* or *Kirchia-bagla*, H.—*Nella muka konga*, Tel.

The Little Egret.

Descr.—In breeding, plumage as in the others, white; a pendent occipital crest of two or three long narrow feathers; dorsal train of decomposed feathers, long, and in fine specimens curving upwards at the extremity; some lengthened pectoral feathers also.

Bill black (at all seasons); whitish at the base; base of bill and orbitar region greenish-yellow; legs black; toes yellow or greenish-yellow. Length 24 to 25 inches; wing 11; tail nearly 4; bill at front $3\frac{2}{10}$; tarsus 4; middle toe and claw $2\frac{1}{4}$ to $2\frac{1}{2}$.

In non-breeding dress, the occipital crest and the dorsal and pectoral plumes are wanting.

The Little Egret is found throughout the Old World to Australia, and is very abundant in India. Here it always breeds in trees, laying four or five eggs, (sometimes as many as six, according to Theobald,) of a full blue-green. It is a very familiar bird when not disturbed.

Another species of this section is *H. melanopus*, Wagler, (*nigripes*, Temminck,) from Malayana and Tenasserim, which may extend into our North-eastern limits, and is, indeed, included by Irby in his Birds of Oudh and Kumaon, No. 176. He, however, states that this Egret and *garzetta* are often seen with cattle; and it is possible (as he says that this is the smallest of the group,) that he has mistaken *A. caboga* in winter dress for it. *A. melanopus* has the feet always black instead of yellowish, as in *garzetta*, the crest shorter or wanting, and perhaps may be Gould's *immaculata*. Bonaparte, however, makes *A. melanopus*, one of the races of *A. intermedia*, from Java. *A. candidissima*, Gmelin, from America, is another good species of this minor group.

Gen. DEMI-EGRETTA, Blyth.

Syn. *Herodias*, apud Bonaparte.

Char.—Bill long, slender, otherwise much as in *Herodias*, but the adult plumage is dark, the young birds alone being white.

This is a group comprising several species from all parts of the world, which agree in the character and changes of their plumage, appear more especially to frequent the vicinity of the sea and the mouths of rivers, and are more abundant among islands than on continents.

928. **Demi-egretta asha**, SYKES.

Ardea, apud SYKES, Cat. 171—JERDON, Cat. 305—BLYTH, Cat. 1642—H. pannosa, GOULD, Birds of Australia VI., pl. 59?—*Kala bagla*, H.

THE ASHY EGRET.

Descr.—Adult, in breeding season, has the whole plumage dusky-slaty; the chin and throat white; an occipital crest; a dorsal train of decomposed feathers not reaching to the end of the tail; and a pectoral plume of narrow and pointed, not decomposed, feathers.

Bill reddish-yellow, dusky above; orbitar skin yellow-green; irides yellow; legs blackish; the feet and lower part of the tarsus yellowish. Length 24 inches; wing $10\frac{1}{4}$; tail $3\frac{1}{4}$; bill at front $3\frac{1}{2}$; tarsus nearly 4; middle toe and claw $2\frac{3}{4}$.

In the cold season entirely of a slaty colour, the throat alone white.

Young birds are pure white throughout, or, according to Layard, have some of the wing-coverts edged with grey. At the first breeding season they assume the dark slaty colour, with traces of white on the winglet, and lower surface in some; specimens in a state of change are, of course, much varied with white.

This curious Egret appears to be very similar to Gould's *H. pannosa*, from Australia. Blyth remarks that his figure (quoted above) quite agrees with adult birds in breeding plumage, but that the dorsal train of the Australian species is longer, fuller, and slightly turned up, the feathers also somewhat more decomposed.

It is chiefly a bird of the sea-coasts, but I have found it more than 200 miles inland, on the banks of rivers in the Deccan, and Sykes procured his specimens from nearly the same locality. It is tolerably common at the mouths of rivers, on both coasts, and, according to Layard, makes its nest on trees near water, laying four to six eggs, of the usual pale greenish-blue colour.

H. jugularis, Forster, figured Gould, Birds of Australia, VI. pl. 60., *concolor*, Blyth, *gularis*, Raffles, *Greyi*, Gray, (the white stage, figured by Gould, VI. pl. 61), is a nearly allied species which has been found in Arrakan, the Nicobars, the Andamans, and in several of the Malayan islands, and may occur in the Sunderbuns. It has the feet and legs shorter (as well as the bill), and stouter proportionally, and a much narrower white stripe on the chin and throat, absent in some.

Bonaparte separates from *A. Greyi*, *jugularis*, Forster, which he says is the same as *A. sacra*, Gmelin, and is found in the islands of the Pacific Ocean, but Gray unites them all (Cat. Birds of Pacific); the former ornithologist gives *A. novæ Hollandiæ*, Latham; *A. picata*, Gould; *A. novæ Guineæ*, Gmelin; and *A. atra*, Cuvier, as

species of this group, from the islands and Oceanica. Gray has another *A. albolineata*, which he however doubtfully separates from *pannosa*. *A. gularis*, Boie; *A. ardesiaca*, Wagler; *A. schistacea*, Licht.; and *A. calceolata*, Dubus; are African members of the genus; and *A. cœrulea*, L., and *A. rufescens*, Gmelin, from America, also appear to belong to this group.

A. picata, Gould, appears to me to belong to a very different group, not far from *Butorides*; and Gray has *A. aruensis* from the Aru islands, very close to the former bird.

Gen. BUPHUS, Boie.

Syn. *Bubulcus*, Pucheran.

Char.—Bill somewhat short, stout, slightly curved along the culmen, smooth; feet longer, otherwise as in *Egretta*: assumes golden-yellow, hair-like plumes on the head, breast, and back during the breeding season.

This is the least aquatic in its habits of all the Herons, feeding chiefly among cattle in grass meadows or plains. There are two or three closely allied species.

929. **Buphus coromandus**, BODDAERT.

Ardea, apud BODDAERT—Pl. Enl. 910—A. caboga, FRANKLIN—SYKES, Cat. 175—JERDON, Cat. 308—BLYTH, Cat. 1640—A. affinis, HORSFIELD—A. russata, TEMMINCK—A. bubulcus from India, Auct.—*Doria-bagla* and *Gai-bagla*, H. and Beng.—*Soorkhia-bagla* of some—*Samti-konga*, Tel.

THE CATTLE EGRET.

Descr.—In summer dress, the whole head, which is crested, neck, and breast, rich golden buff, except the chin, and a narrow median line on the neck; dorsal plumes of the same hue, very filamentose and decomposed, about 8 or 9 inches long; elongated feathers of the breast white at the base, yellow at the tip; the rest of the plumage pure white.

Bill deep orange yellow; orbitar region yellowish-pink; irides pale yellow; legs whitish-green on the tibia and to a little below the knee; rest of the tarsus blackish-green, with a reddish tinge

on the toes, which are greenish beneath. Length 21 inches; extent 37; wing $10\frac{1}{4}$; tail 4; bill at front $2\frac{1}{2}$; tarsus $3\frac{1}{2}$; middle toe claw $2\frac{1}{4}$.

In non-breeding dress the plumage is entirely white; the bill yellow in place of orange, and the orbitar skin duller.

The Cattle-heron is found throughout India, Burmah, and Ceylon, in great abundance, more especially towards the North of India; also extending through other parts of Asia, and even to the North of Africa. It very closely resembles the *A. bubulcus* of Northern Africa and the South of Europe, but is said to differ in some points, *viz.*, in the longer tarsi, the more vivid hue of the golden-yellow, which is also of greater extent, and in the less denuded orbits.

It always attends cattle whilst grazing, and picks up grasshoppers and their larvæ disturbed by them. Now and then it varies its food with small fish, tadpoles, and aquatic insects. It does not appear to breed in the South of India, though it does in Ceylon according to Layard; but in Bengal and Burmah it forms vast colonies, making the usual nest of sticks on trees, and usually laying four or five, sometimes six pale greenish-blue eggs.

A. bubulcus, Savigny, the species of Africa and the South of Europe is *A. ibis* of Hapelquist; and, according to Taylor, does duty in Egypt as the *Ibis*, being pointed out by Dragomans as that more rare bird.

Gen. Ardeola, Boie.

Syn. *Buphus* apud Bonaparte.

Char.—Bill moderately long, straight, pointed; tarsus short, stout; feet moderately large; tibia feathered nearly to the knee; neck short, densely feathered; the feathers long and lax; toes long; dorsal plumes in the breeding season hair-like, dark; wings white.

The Squacco-herons or Crab-herons form a small group of very closely allied species, found in the hot and temperate climates of both Continents, very abundant in many places, and familiar in their habits. In their winter garb those of the Old Continent are barely distinguishable from each other.

930. Ardeola leucoptera, Boddaert.

Ardea, apud Boddaert—Blyth, Cat. 1645—A. Grayii, Sykes, Cat. 174—A. malaccensis, Gmelin—Jerdón, Cat. 307—Hardwicke, Ill. Ind. Zool. pl.—*Andhe bagla* H., also *Kani bagla*,—*Konch bogla*, Beng.—*Gudi-konga*, Tel., all signifying Blind heron—*Nuli-madiyan*, Tam., *i. e.* blind idiot—*Ral puchake* of the Gonds—*Paddy-bird* of Europeans.

The Pond Heron.

Descr.—Adult in full breeding plumage has the head crested, with long occipital white plumes; head and neck greyish-yellow; the back with the feathers decomposed, dark marone; wings, rump and upper tail-coverts, tail, and all beneath white.

Bill blue at the base, yellowish in the middle and edges, and black at the tip; orbits greenish-yellow; irides bright yellow; legs and feet dull green. Length 18½ inches; extent 28; wing 8½; tail 3; bill at front 2½; tarsus 2⅜; middle toe and claw 2⅜.

In non-breeding dress, the head, neck, and breast are fulvous with brown stripes, darkest on the head; the upper plumage pale ashy brown, wings (except the uppermost tertials) white, and the lower parts from the breast white; thigh-coverts fulvous.

This is one of the best known and most abundant of its tribe in India, seen at the side of every river, tank, ditch, or pool of water throughout India. It is so confiding and familiar as to have received the name of Blind Heron in all parts of the country. Its especial food is crabs, for which it watches patiently, either in the water or in the fields, and especially on the small raised bunds or divisions between rice-fields. It will, of course, also eat fish, frogs, and various aquatic insects. It begins to change its plumage about May, and in June and July all individuals have assumed the handsome plumage, which differs so materially from that of the cold weather, as to have been considered by many to constitute a perfectly distinct species; such indeed was the opinion of Sykes. It breeds on trees, in all parts of the country, sometimes alone, sometimes several on the same tree, making a rough nest of sticks, and laying four or five pale greenish-blue eggs. It is a favorite quarry for the *Shikra, (Micronisus badius).*

A. comata, Pallas, of Europe, and North Africa, appears to have similar habits, but it is described as nidificating in dense beds of reeds, making a large nest of rushes and weeds. *A. speciosa*, Horsfield, from Malayana and China, has the dorsal plumes blackish-green. Bonaparte has a fourth species, *A. bacchus*, from Malacca, with the dorsal plumes blackish-grey, probably merely a worn state of *speciosa*.

Ardea sibilatrix, Temm., pl. col. 263, from America, is placed in this genus by Bonaparte, who states that it exhibits analogies with some of the Night-herons. It has the dorsal plumes blackish-green.

Gen. Butorides, Blyth.

Char.—Bill rather long, straight, moderately stout; neck short, thickish; tibia feathered nearly to the joint, tarsus short; toes short; inner toe short. Head crested; feathers of the back and scapulars highly lanceolate; plumage dull blue.

This genus may be said to have some of the characters of the Bitterns with others of the Night-herons.

931. Butorides javanica, Horsfield.

Ardea, apud Horsfield—Blyth, Cat. 1644—Sykes, Cat. 177—Jerdon, Cat. 306—*Kancha bagla H.*—*Kana-bogla*, Beng.—*Dosi-konga*, Tel., *Doshi-koku*, Tam.

The Little Green Heron.

Descr.—Head, with lengthened occipital crest, glossy black; a short black line from below the eye, between which and the black head the ear-coverts are greyish-white; back and sides of neck ashy-grey; feathers of the back, including the scapulars and feathers covering the tertials, lengthened, lanceolate, dull green, the upper ones with an ashy tinge; rump reddish-ashy; upper tail-coverts greenish; wing-coverts glossy-green, edged with pale fulvous; quills dark slaty, narrowly tipped white, and passing into green on the tertials, edged with fulvous; tail dark slaty, and the lower plumage, with the thigh-coverts, ashy, with a central line down the neck to the breast whitish, the feathers

being white at the base, and becoming albescent on the vent and under tail-coverts.

Bill black above, pale yellow beneath; legs pale yellow-green, the soles dark yellow; irides bright yellow; lores yellowish green. Length 16 to 17 inches; wing 7; tail $2\frac{1}{4}$; bill $2\frac{1}{2}$; tarsus $1\frac{7}{8}$; middle toe 2.

The Green Bittern is found throughout the greater part of India and Ceylon, extending to Burmah and Malayana, and chiefly affects wooded rivers, nullahs, and water-courses, perching on boughs overhanging the water. It is for the most part nocturnal in its habits, and I have seen it, every evening shortly after sunset, come to the bank of the Ganges, and walk slowly along the edge of the water, looking for crabs or other food.

Hodgson separates the Indian race from the Malayan under the name of *chloriceps*. Other species quoted by Bonaparte are *B. stagnatilis*, Gould; *B. patruelis*, Peale, from the Pacific islands, and *B. macrorhyncha*, Gould, from Australia; *B. virescens*, and *B. scapularis*, from America; and *B. atricapilla*, from Africa.

Gen. ARDETTA, Gray.

Bill slender, straight; tibia feathered nearly to the joint; tarsus short; toes lengthened and strong; claws long. Of very small or moderate size. Plumage of the neck more or less lengthened, as in the Bittern; of nocturnal habits.

These birds may be said to be Bitterns with the bill of the Egret. All frequent dense cover, thick reeds, long grass, or thickets of bushes, and feed chiefly at night.

Bonaparte separates the Black Bitterns from the Little Bitterns, retaining *Ardetta* for the former, which have the toes not quite so lengthened, and the plumage more or less black.

932. **Ardetta flavicollis**, LATHAM.

Ardea, apud LATHAM.—BLYTH, Cat. 1651—A. nigra, VIEILLOT—JERDON, Ill. Ind. Orn., pl. 16—A. picta, RAFFLES—GOULD, Birds Australia VI, pl. 65—HARDWICKE, Ill. Ind. Zool., Vol. 2, pl. 73.—*Kala bagla*, H.—*Nol-bagla*, H. and Beng.

The Black Bittern.

Descr.—Plumage above, in breeding season, dull cinereous black; chin and throat with the feathers white, tipped with red-brown; the large feathers of the neck mixed with white, red-brown, and dusky black, each feather having some black at the base and tip, and more or less red-brown on one web only; a stripe of golden yellow down the side of the neck, widening inferiorly; feathers of the back lengthened, but not decomposed, forming a dorsal plume; the feathers of the breast dark ashy, slightly lengthened; abdomen dusky, mixed with whitish; inner wing-coverts dusky reddish. The young bird has the feathers slightly edged with rufous, and the throat and neck less richly coloured than in the adult.

Bill livid red-brown, dusky on the culmen; cere livid purple; irides yellow, in some with an outer circle of red; legs pale brown, with a tinge of green in some, reddish-brown in others. Length 23 to 24 inches; extent 30; wing 8½; tail 3; bill at front 3½; tarsus 2½; middle toe and claw 2½.

This very handsome Bittern appears to be generally diffused throughout India, but is by no means common or abundant. I have seen it on the Malabar Coast, in rice-fields; and obtained it in the neighbourhood of Madras, and in various parts of Bengal, but I never saw it in Central India; nor the Deccan; and it appears to be rare in the N. W. Provinces. It frequents swamps, rice-fields, and beds of rushes and reeds; and is almost entirely nocturnal in its habits. It comes out to feed about sunset, and has a low deep booming call, like the sound of a small drum. I have never procured its nest, but the Australian bird is said to build in low trees, and to lay eggs of a pale bluish-green colour, more rounded in form than is usual in this family. From the nature of the ground it frequents, I think it is more likely however, that it generally builds among reeds.

It extends to Ceylon, Burmah, (where it is very abundant,) and through the Malayan islands to Australia; it is also found in China.

Bonaparte separates the Javanese race as *A. bilineata*, Cuvier; and the Australian as *A. Gouldi;* and he gives *A. sturmi*, Wagler, and *A. gutturalis*, Smith, from Africa, as belonging to the same group.

The next birds are placed by Bonaparte under *Ardeola*, and have the toes longer; the tail very short, with only 10 feathers; the body very much compressed and Rail-like; and the feathers of the neck not so dense as in the last.

933. **Ardetta cinnamomea**, GMELIN.

Ardea, apud GMELIN—BLYTH, Cat. 1652—JERDON, Cat. 309 —*Lal-bagla*, H.—*Khyri-bogla*, Beng.—*Dosi-konga*. Tel.

THE CHESNUT BITTERN.

Descr.—Above, fine chesnut colour, with a tinge of cinereous on the crown; beneath, fulvous; whitish on the throat, and with a pectoral gorget of feathers, dark brown in the centre; thigh coverts cinnamomeous; lower surface of the wings dull ashy.

Bill yellow, dusky on the ridge; cere, and base of bill yellow; irides yellow; legs greenish-yellow with yellow soles. Length 16 inches; extent 22; wing 6; tail $1\frac{3}{4}$; bill at front 2; tarsus 2; middle toe $2\frac{1}{4}$. The young bird has the plumage streaked, the feathers being reddish-brown in the centre with pale yellowish margins.

This Little Bittern frequents high reeds, and thickets of bushes intermixed with reeds; like the others of its genus, it is chiefly nocturnal in its habits, but I have seen it feeding during the day. It is found throughout India and Ceylon, extending through Burmah and the Malayan islands.

934. **Ardetta sinensis**, GMELIN.

Ardea, apud GMELIN—BLYTH, Cat. 1653—HARDWICKE, Ill. Ind. Zool. pl.—A. lepida and A. nebulosa, HORSFIELD.—*Jun-bagla*, Beng. and H.—also *Kat-bogla*, Beng.

THE YELLOW BITTERN.

Descr.—Adult, top of head black; back of neck cinnamon-rufous; face, sides of neck, and breast pale fulvous-yellow, white on the chin; back and scapulars pale earthy or sandy brown; wing-coverts and tertiaries pale isabelline fulvous, the latter

verging to pale brownish; quills and tail black; sides of the breast deep brown, edged with pale yellow, passing to white on the vent and under tail-coverts; back of neck and rest of lower plumage yellowish-white, passing to white.

Bill pale yellow, brownish on the culmen; irides yellow; legs and feet pale green. Length 14 to 15 inches; wing 5¼; tail 1¾; bill at front 2¼; tarsus 1¾; middle toe 1; claw 2.

The young bird has the upper plumage more or less cinnamon brown, mixed with pale fulvous, and some of the occipital feathers blackish-brown.

This Bittern is less abundant than the last, but is equally diffused throughout India and the neighbouring countries, or even still more so, being found in the Ladrone islands. It frequents similar situations, and has like habits.

935. **Ardetta minuta**, Linnæus.

Ardea, apud Linnæus, Blyth, Cat. 1655—Gould, Birds of Europe, pl. 282.

The Little Bittern of Europe.

Descr.—Top of head, occiput, back, scapulars, and tail, glossy black; small wing-coverts and the upper three-fourths of the other coverts pale sienna-yellow, the lower fourth more or less white; quills ashy-black; cheeks, neck, and all the lower surface of the body pale rufescent, tinged with purplish yellow on the neck, and with brown streaks on the flanks.

Bill bright yellow, dusky above; round the eyes yellow; irides yellow; feet yellowish-green. Length 14 inches; wing 5¾; tail 2; bill at front 1¾; tarsus 1½; middle toe 1¾.

The Little Bittern of Europe is said to have been procured in Nepal, and is also recorded in Adams' List of the Birds of India, No. 272; but as some of the species recorded by this observer do not appear to have been correctly identified, he may have mistaken the last bird for it.

Bonaparte records of this lesser group, *A. pusilla*, V., from Australia, very like *minuta*; *A. podiceps*, Bonap., from Africa; *A., exilis*, L., and *A. erythromelas*, V., from America.

Gen. BOTAURUS, Brisson.

Char.—Bill rather short, stout, higher at the base than broad, the upper mandible curved towards the point; tarsi short; tibia feathered for the greater portion of its length; feet very long; claws long, moderately curved; neck short, densely feathered and thick.

The true Bitterns are nocturnal Herons, with thick necks, the hinder part downy, but the sides and front with long lax feathers, which can be expanded laterally at pleasure; they have rather short legs with long feet, and very beautiful mottled or game plumage. They are solitary birds, inhabiting swamps and reedy marshes.

936. **Botaurus stellaris**, LINNÆUS.

Ardea, apud LINNÆUS—BLYTH, Cat. 1650—JERDON, Cat. 310—GOULD, Birds of Europe, pl. 280—*Buz*, H.—*Nir-goung*, H. of some—*Chita oyah*, Beng.

THE BITTERN.

Descr.—Crown of head and a broad moustache black; neck ochre-yellow, with brown zig-zag lines on the sides, and long streaks and spots of brown in front; upper plumage ochre-yellow with a tinge of reddish, each feather marked with a dusky spot; primaries and secondaries dark ferruginous, with bars of blackish brown; all the coverts (except the primary) and the scapulars, mottled yellow and dusky; beneath, the same, but paler, and with large dusky streaks.

Bill pale yellow below and at the edges, brown above; orbits pale yellow; irides bright gamboge-yellow; legs greenish-yellow. Length 26 to 30 inches; of one 28 inches long; extent 46; wing 13; tail 4½; bill at front 3; tarsus 3¾; middle toe and claw 4½.

The Bittern of Europe is found throughout Central and Northern India, but is rare or wanting in the South. I have known of its having been killed in the Deccan, and I have shot it in Central India and Bengal. It frequents long grass or reeds by the sides of tanks or rivers, and swampy ground covered with long grass. It is quite nocturnal in its habits, and breeds on the ground, near water, making a large nest of sticks, reeds, &c., and laying, it is said, four or five

pale asparagus-green eggs. The Bittern feeds on frogs, fish, &c., and it is recorded that a Water-Rail entire was taken out of the stomach of one in Scotland. It is said to utter its booming call in the air rising to some height. It is excellent eating, not fishy in the smallest degree, and has a high game flavour. The Bittern is found throughout Europe, Asia, and Africa.

Other Bitterns are *B. minor*, from America, occasionally killed in Britain; *B. limnophilax*, Temm., from Java; *B. heliosylos*, Lesson, from New Guinea, and *B. australis*, Gould, from Australia. *Nycticorax goisaki*, Temm., from Japan, made the type of *Gorsachius* by Bonaparte, is a true Bittern; and Mr. Blyth has just written me that it appears to be the same as *Ardea melalophos*, Raffles, often sent from Malacca. *Tigrisoma*, or the Tiger-bitterns are confined to America.

Gen. NYCTICORAX, Stephens.

Char.—Bill short, stout, culmen curved; wings with 3rd quill longest; tarsus short, reticulated in front, with large hexagonal scales; feet moderate; claws short, curved; head crested; tail broad, even.

The Night-herons form a well marked group, of purely nocturnal habits; the neck is short, covered with lax feathers.

937. Nycticorax griseus, LINNÆUS.

Ardea, apud LINNÆUS—BLYTH, Cat. 1646—JERDON, Cat. 311—SYKES, Cat. 179—GOULD, Birds of Europe, pl. 279—*Wak*, H.—*Oyah* Beng.; also *Kowa dauk*, and *Batchka*, Beng.—*Chinta wakka*, Tel.—*Gadri* in Sindh.

THE NIGHT-HERON.

Descr.—Forehead and a narrow streak above the eye white; crown of the head, upper part of back, and scapulars, black glossed with green; occiput with a crest of three (or more) narrow long white feathers, 6 to 7 inches long, channeled, and fitting into each other; lower back, wings, and tail fine blue grey; all beneath pure white.

Bill black, yellowish at the base; lores and orbits yellowish-green; irides blood red; feet yellowish-green. Length 21 to

23 inches; wing $12\frac{1}{2}$; tail $3\frac{3}{4}$; bill at front $2\frac{8}{10}$; tarsus 3; middle toe and claw $3\frac{1}{10}$.

The young bird wants the occipital plumes; the upper plumage is brownish ashy, with whitish spots; and the lower plumage whitish with brown streaks.

The Night-heron is found throughout India, is very common in many parts of the country, but is somewhat local in its distribution. During the day it roosts in Palm groves, Tamarind trees, and patches of jungle near water, issuing forth soon after sunset, and winging its way towards its feeding grounds, uttering at intervals its well known cry, *wak-wak*, which has been given as its name throughout the greater part of India. It breeds on Palms, Tamarind or other trees, in society, making a nest of sticks, and laying usually four pale bluish-green eggs.

The Night-heron is somewhat rare in England, but is found throughout most parts of Europe, Asia, and Africa. In the latter country, it is said sometimes to breed on the ground in swamps, among the matted roots of reeds. Swinhoe states that it is the sacred bird of the Great Temple in Canton; that he observed that the eggs were hatched at different periods; and that whilst it had young, it fed them all the day long. I have never, to my knowledge, seen the Night-heron abroad during the day.

Various other Night-herons are found in different parts of the world, *viz.*, *N. Gardeni* of America, (if really distinct from the European bird); *N. obscurus*, Licht., from Chili and the Malouine Islands; and *N. violacea*, L., from the West Indies and South America, made the type of the genus *Nycticorax*, Reich.

One group has the upper plumage chesnut, thus approximating the Bitterns and *Ardetta*, *viz.* *N. caledonicus*, Gmelin; *N. manillensis*, Vigors; and *N. crassirostris*, Vigors, from Manilla and the Borneo Islands.

That curious bird the Boat-bill of South America, *Cancroma cochlearia*, with a large, broad, convex bill, is essentially a Heron; and the lately discovered *Whale-bill* of Africa, *Balæniceps rex*, Gould, is undoubtedly another nearly related form, as shown, among other points of similitude, by the peculiar powder-tufts seated on different parts of the body: the middle toe, however, is

not pectinated. Parker states that it is decidedly an Ardeine bird with Pelecanine tendencies. These birds are placed as the types of two sub-families *Cancrominæ*, and *Balænicipinæ*, of one family, CANCROMIDÆ, Bonaparte.

Scopus umbretta, the Umbre, is usually considered as belonging also to this family, but it appears to be rather closely related to the *Tantalidæ*; its flight is said to be quite different from that of the Herons; the middle toe, however, is pectinated. *Rhinochetus jubatus*, Desmurs, is a highly crested form of bird referred to the Herons, but from its running like the Rails, (whose habits it otherwise possesses) it has been considered a sort of link between the *Rallidæ* and *Ardeidæ*. *Eurypyga* or *Helias* is generally classed in this family, as well as *Aramus*; the former appears to have some relations of analogy with the *Scolopacidæ*, and especially with *Rhynchæa*; and *Aramus* with the Rails, *vide antea, p. Eurypyga*, however, is stated to possess one pair of powder down patches, and in that case might be placed as an aberrant form of the Herons. Its sternum is figured in the Rev. de Zool., much narrowed, without a notch, and not at all unlike that of *Aramus* figured on the same plate; both have eggs more like those of the Rails than the Herons. *A. pileata*, Latham, from South America, is considered to be a Night-heron, and is separated as *Pilherodius*, Reich.; and *A. cucullata*, Licht., from Africa, is made the type of *Calherodius*, Bonap. The only other type of the Herons not alluded to previously, is the *A. agami*, Gmelin, of South America, placed by some as a *Nycticorax*, but separated by Bonaparte as the type of *Agamia*, Reich., and placed between *Ardeola* and *Butorides*.

Fam. TANTALIDÆ.

Bill long, more or less thick, arched in many; the culmen rounded and bent; nostrils usually basal; wings long; tail rather short; tarsus long or moderate; feet moderate; anterior toes joined at the base by web; hind toe moderate, or rather short, resting on the ground.

This family, by some not separated from the Herons, differs conspicuously from them by possessing a less sharp and pointed bill,

which is frequently bent downwards; and also shorter feet. The flight, moreover, is different, and is performed by more repeated and quick flappings, alternating with intervals of rest with the wings outstretched. The birds of this family seek their food too in a different manner; they hunt about for it, and move the bill in water till some object is touched, which is then immediately seized. They feed chiefly in marshes and shallow water; a few in meadows and ploughed land. They associate in more or less numerous flocks, and breed for the most part on trees, making a large nest of sticks, and laying several white eggs. Some have the tertials elongated and decomposed, forming ornamental tufts.

In their anatomical structure, the *Tantalidæ* approach the other *Cultirostres*, but the sternum has, in some at all events, a double emargination on each side; the cæca are very minute, and the gizzard moderately muscular. Parker in his paper previously alluded to, says he feels pretty certain that the Spoon-bill and Ibis will have to be placed in the *Longirostres*; but he must have overlooked their nidification, and the fact of the young requiring to be fed by their parents till full-grown.

They may be divided into the following sub-families:—1st, *Tantalinæ*;—2nd, *Plataleinæ*;—3rd, *Anastomatinæ*;—and 4th, *Ibisinæ*.

Sub-fam. TANTALINÆ.

Bill very large, thick, rounded, smooth; legs long.

Gen. TANTALUS, Linnæus.

Char.—Bill lengthened, straight; culmen rounded, the tip bent down, slightly emarginated; nostrils basal, superior; head, cheeks, and throat bare; legs lengthened; tibia nude for half its length; tarsus long, reticulated; toes moderately long, with a web between the front toes; hind toe moderately long, slightly raised.

The Wood-Ibises or Pelican-Ibises are birds of large size, and more or less white plumage with lengthened tertials. They are found in the hot countries of both Continents.

938. Tantalus leucocephalus, GMELIN.

SYKES, Cat. 187—JERDON, Cat. 322—BLYTH, Cat. 1623—GOULD, Birds of Asia, Pt. XIV., pl. 5—T. gangeticus, SHAW—

Pennant, Ind. Zool., pl. 11—*Dokh*, H.—*Jaunghal* or *Jaunghil*, H. in the North of India—*Kat saranga*, and *Janghir*, Beng.—also *Ram-jhankar* and *Sona-janga*, Beng.—*Lamjang* and *Lamduk*, Sindh. —*Yerri kali-konga*, Tel.—*Singa nareh*, Tam.

The Pelican-Ibis.

Descr.—Plumage white; the quills and tail richly glossed green black; tertiaries white, beautifully tinged with rosy, with a darker band near the end, and a white tip; the feathers loose and decomposed; lesser and median coverts glossy green, with white edges; greater coverts pure white.

Bill deep yellow (with the tip greenish), as are the naked orbits, head and gular skin; irides pale yellow-brown, grey in some; legs fleshy red. Length about 42 inches; extent 6 feet; wing 20 inches; tail 7; bill at front 9 to 10; tarsus nearly 8.

In summer the tertiaries acquire a deeper rosy tint, and the bill and nude parts become of a brighter and deeper yellow. The young bird has the plumage generally brown, paler on the back and rump, dark on the wing-coverts; beneath more or less albescent, with a broad brown patch on the sides of the abdomen. Bill pale greenish-yellow.

The Pelican-Ibis is extremely common throughout India, Burmah, and Ceylon, frequenting rivers, tanks, ponds, and marshes, generally in parties more or less numerous, occasionally alone. It stalks about the shallows with its bill in the water, partially held open, and instantly seizes any fish, frog, or crab that comes in its way. If the fish be a spiny one, it crushes its spines between its strong mandibles, and then swallows it, head foremost. During the heat of the day, it stands motionless in water, knee deep, digesting its morning meal. It breeds on high trees, making a large nest of sticks, and laying four white eggs, sometimes faintly blotched with pale brown. Burgess found fifty nests together in some large Banian trees, in a village in the Deccan in February. Further North it is later, breeding in May and June. When caught young, it soon gets very tame, and recognises the man who feeds it. I have seen one threaten

children who used to tease it, spreading its wings and tail, and clattering its mandibles together. I have never heard it utter any cry, and believe that it wants the proper vocal muscles.

It is replaced in the Malay countries by *T. lacteus*, Temminck; and there are other species in Africa and America, *T. ibis*, and *T. loculator*.

Sub-fam. PLATALEINÆ.

Bill very broad, flat, and depressed.

Gen. PLATALEA, LINNÆUS.

Char.—Bill long, very broad, depressed and thin, dilated, and rounded at the extremity, like a *spatula*; nostrils basal, oblong, apert; wings moderate, 2nd quill longest; tibia bare for nearly half its length; tarsus moderately long, reticulated; the three anterior toes united at the base by a deeply cut web; head and face more or less nude.

The trachea of the adult bird makes a figure of eight convolution before its bifurcation; but has no proper muscle of voice, and the bird is therefore, like the Storks, quite dumb. The tongue is very short and obtuse.

939. **Platalea leucorodia**, LINNÆUS.

BLYTH, Cat. 1625—SYKES, Cat. 182—JERDON, Cat. 312—GOULD, Birds of Europe, pl. 286—*Chamach buza*, H., *i. e.*, Spoon Ibis—*Chinta*, Beng.—*Genta muku konga*, Tel.

THE SPOON-BILL.

Descr.—Plumage pure white, with a patch of buffy-yellow on the upper part of the breast, extending up the sides towards the back; the crest composed of long subulate and canaliculate feathers placed on the occiput.

Bill black, more or less mottled with yellowish undulations during the winter, ochry-yellow at the tip; irides blood-red; naked skin of face and gular skin orange-yellow; legs black. Length 31 to 36 inches; wing 14½ to 16; tail 6½; bill at front $7\frac{3}{10}$ to 8½; breadth nearly 2; tarsus 5 to 6.

The female is said to be a little smaller; and the young wants the crest, has the shafts of the quills and the tips of the primaries black, the naked orbits dingy white, and the bill dark-ashy, soft and flexible. The patch of buff on the breast is said not to appear till the 2nd or 3rd year.

The Spoon-bill is found throughout India, not perhaps in great abundance, but generally diffused, frequenting rivers, lakes, and tanks. It is generally met with in small parties, occasionally in rather large flocks; feeds in shallow water, moving its bill about from side to side and picking up various aquatic insects and larvæ, small crustacea and molluscs, and also frogs and fish. It is very frequently seen in company with the White Ibis, both when feeding and when flying from one part of the country to another. The Spoon-bill breeds, occasionally at all events, in this country, though probably many migrate to Central Asia at the breeding season. Burgess found the nest in lofty trees, and Layard also met with them in Ceylon. The eggs are said to be chalky white, with a few faint rusty blotches. Occasionally it appears to nidificate in marshes, making a large nest of weeds, fixed to reeds in the water.

The Spoon-bill is found throughout the greater part of Asia, Europe, and Africa. Pallas asserts that its voice, though rarely heard, is stridulous. It is excellent eating.

Other species of Spoon-bill are *Platalea major*, and *P. minor*, Temm. and Schleg., from Japan, very closely allied to our species, one or both of which may possibly occur in India; *P. ajaya*, L., a very beautiful rose-coloured species from America; and *P. melanorhynchus*, Reich., (*regia*, Gould,); and *P. flavipes*, Gould, from Australia.

Sub-fam. ANASTŌMATINÆ.

Bill very thick, stout, coarse, gaping in the middle.

Bonaparte places this sub-family with the Storks, but its situation is undoubtedly in this family.

Gen. ANASTOMUS, Illiger.

Syn. *Hians*, Lacepede.

Char.—Bill moderately long, not deeply cleft, very thick, solid, nearly straight; mandibles nearly equal, not meeting in the middle,

but leaving a greater or smaller space gaping, upper mandible notched at the tip; nostrils basal, superior; wings moderately long, with 2nd and 3rd quills longest, sub-equal; tail moderate, nearly even; tibiæ naked for a considerable space; tarsi long, reticulated; feet rather short, the front toes joined at the base by web.

The Shell-eaters are a very curious group, having a thick, solid, fibrous beak, with a more or less open space between the mandibles. This space appears to exist even in the young birds, and is not the result of attrition, as is generally supposed.

940. **Anastomus oscitans,** Boddaert.

Ardea, apud Boddaert—Blyth, Cat. 1626—A. typus Temminck—Sykes, Cat. 186—Jerdon, Cat. 321—A. albus, Vieillot—Pl. Enl. 932—*Gungla*, *Ghongal*, H.—*Do-khahar*, or *Dokar*, H. in Behar—*Tonte bhanga*, and *Shamak-bhunga*, Beng.; also *Samak-khol*, and *Hammak-kas*, in same parts—*Gulu-konga*, Tel.—*Paoona konga*, of Southern Gonds—*Natte-kuti-naréh*, Tam.—all these names having reference to shells.

The Shell Ibis.

Descr.—General colour of the plumage pale ashy-grey, tinged with reddish on the head and neck; the winglet, primaries, secondaries, tertials, scapulars, and tail black.

Bill dull greenish, tinged with reddish beneath; nude orbits and gular skin blackish; irides grey or pale brown; legs pale fleshy. Length 29 to 32 inches; extent 50 to 54; wing 16½ to 17; tail 7; bill at front 6¼; tarsus 5½.

Some birds are nearly white, and these have been usually considered to be the young birds, but I believe them to be old birds, which assume this state whilst breeding, either from an actual loss of colouring matter, or simply from the action of light on the old feathers. In June and the early part of July many birds are met with, with this variety of plumage, and still later I have seen two white birds accompanied by three or four grey ones; these I concluded to be the parents and their young brood. One which I lately shot at this season, of a pure grey colour, had the young

feathers still in progress, and coming forth pure grey. This may have been a young bird of the year, or an adult bird moulting.

This curious bird is very abundant throughout those parts of the country which abound in rivers, tanks, and marshes, particularly in Bengal, where many hundreds may be seen congregated together, roosting on trees overhanging some large jheel. It lives chiefly on molluscs, especially on the large *Ampullaria*, but also on various others. Colonel Sykes states that he found it feeding on a species of *Unio*. I was formerly of opinion that the open space between the mandibles was mainly caused by a process of wearing down from constant attrition with various shells; I am now inclined to doubt this. Many years ago several Shell-eaters were brought to me alive, for the purpose of training a Bhyri, and these, as is usual to prevent them struggling or fluttering, had their eyes sown up. To feed them the Falconer had a quantity of the large *Ampullaria* brought, which were placed before the captive and blinded Shell-eaters. The bird secured a shell by its feet, and after sundry alterations of its position, succeeded in cutting off the operculum as cleanly as if it had been done by a razor, but so rapidly, that I was unable to see the exact way in which it was accomplished. It then inserted the tip of its clumsy beak into the open mouth of the shell, and after working it about for a short time, pulled out the entire shell-fish almost to its utmost tip. I saw this process repeated many times, and I cannot conceive that a bird which takes the trouble to extract the animal from the comparatively brittle *Ampullaria*, should require to bruise the more hard and solid shell of the *Unio*. Colonel Sykes indeed states that the gape exists in the young individuals (an observation which I have also confirmed), and that it is a provision of nature to enable them to open the shells of the *Unio*, on which they feed; as to how this is effected, I cannot speak from experience. The Shell-eater, in default of its proper food, will eat fish, frogs, &c., but shell-fish are its peculiar aliment, and every native name has reference to this habit.

This *Anastomus* breeds in Northern and Central India, on lofty trees, in June and July, in numbers together, laying four dirty white eggs; it is often found in company with other birds, Night-herons,

Black Ibises, &c. Layard, who also found it breeding in Ceylon, states that it defends its nest most pertinaciously. The flight of this bird is strong and tolerably rapid, and it gives good sport with a *Bhyri*.

Mr. J. Shillingford informs me that it is sometimes caught in the Purneah district by a bamboo, with a noose attached, being bent down and fixed lightly to the ground by a small peg, to which an *Ampullaria* is affixed. The Shell-eater hunting about finds the shell, and moving it to get at its contents, the peg is withdrawn, the bamboo flies up, and the noose catches the bird, which remains dangling in mid air.

The only other species of *Anastomus* known is *A. lamelligerus*, Temminck, from Africa, the type of *Hiator*, Reichenbach, which, however, only differs apparently in the character of the plumage, the feathers of the neck and lower parts ending in a horny lamella.

Sub-fam. IBISINÆ.

Bill long, thin, curved.

The Ibises differ from the previous members of this family by their long, slender, curved, and channeled beaks, and are always called Curlews in India: indeed, Cuvier himself did not separate them from the Curlews. Nevertheless, they do differ considerably from those Longirostral birds, breeding on trees, and feeding their young till full grown. The three species found in India form the types of as many genera.

Gen. THRESKIORNIS, Gray.

Syn. *Ibis*, apud Bonaparte.

Char.—Bill very long, moderately stout, thickened at the base, somewhat square, arched more or less throughout; the upper mandible with a long lateral groove produced to the tip; nostrils basal, narrow; wings long, the 2nd quill longest, or the 3rd and 4th sub-equal to it; tail short, even, of twelve feathers; tarsus moderate; toes long, hallux resting on the ground. Head and neck of the adult devoid of feathers; scapulars and tertials decomposed, lengthened; feathers of the breast elongated; plumage white.

941. Threskiornis melanocephalus, Linnæus.

Tantalus, apud Linnæus—Blyth, Cat. 1622—Ibis Macei, Temminck—Jerdon, Cat. 323—I. religiosa, apud Sykes, Cat. 188—I. bengala, Cuvier—I. stricticollis, Gould, Birds of Australia?—*Munda*, H.—*Sufeid buza*, of some—*Kacha-tor*, or *Kachia tori*, H. in Purneah, *i. e.*, Sickle-beak—*Sabut buza*, Beng. also *Da-chora*—*Manduk*, in Behar.

The White Ibis.

Descr.—Head and neck nude, black; rest of the plumage white, the quills black with green reflections; scapulars and tertials with the barbs disunited and open, lengthened, of a dull inky purple or quaker grey; winglet, primary-coverts, under wing-coverts, and axillaries, creamy-white.

Bill black; irides red-brown (blood-red in some); legs black. Length 29 inches; extent 45; wing 14; tail 5¾; bill at front 6; tarsus 4. The skin of the wing-bones beneath is fine blood-red, like that of the White-necked Stork.

The young have the head and neck more or less clothed with short white feathers, which gradually fall off, and they want the lengthened scapulars.

This Ibis very closely resembles the sacred Ibis of Egypt I. *religiosa*, Cuvier, but differs in having a stronger bill, and in the quills being shorter, with the apical portion hardly blackish, whilst in *religiosa*, they are greenish-black.

The White Ibis is not uncommon in many parts of the country throughout India, is chiefly met with during the cold season, frequenting rivers, tanks, marshes, paddy-fields, and pools of water, in small or moderate flocks, and feeding on molluscs, crustacea, insects, worms, &c., in search of which it moves its bill about in the water. I have seen it occasionally at most seasons, but have not observed its nidification in this country, though Layard states that he found it in Ceylon in company, laying 5 or 6 white eggs, sparingly blotched with rusty. It is exceedingly fishy in taste, and, according to a writer in the *Bengal Sporting Review*, 'execrable' eating.

It is stated by Blyth to be rare in Arrakan, but I have seen it common near Rangoon. We have no record of its distribution out of India.

Another species of this genus, as restricted, is *Ibis strictipennis*, Gould, of Australia, very closely allied to our bird if indeed distinct; and Bonaparte places in this group, *Ibis nippon* of Temminck, from Japan and China, and *I. spinicollis*, Jameson, from Australia: the latter, however, seems to be a sort of link between *Threskiornis* and *Geronticus*.

Gen. GERONTICUS, Wagler.

Char.—Bill more slender and longer than in the last; tarsi robust, covered anteriorly with hexagonal scales; toes somewhat short, stout; top of the head, only, nude. Plumage dark; wings long, ample.

This form differs from the last in its more terrestrial habits. It is found only in the Old World, and chiefly in Africa.

942. Geronticus papillosus, TEMMINCK.

Ibis, apud TEMMINCK, Pl. col. 304—BLYTH, Cat. 1621—SYKES, Cat 190—JERDON, Cat. 324—*Buza*, or *Kala buza*, *H*—*Karakul* or *Karankul*, in some parts—*Nella kankanam*, Tel.—*King Curlew* and *Black Curlew* of Sportsmen.

THE WARTY-HEADED OR BLACK IBIS.

Descr.—Head nude, black, with a triangular patch of bright red papillæ or warts on the back of the head, the point of the triangle just above the eyes; neck and body above fuscous brown, nearly black on the upper tail-coverts; wings glossy steel-blue mixed with purple, and a large white patch on the innermost lesser coverts; tail steel-blue; quills dusky black; lower parts dark blackish-brown; under tail-coverts glossed with blue.

Bill greenish-leaden; irides dull orange-red; legs and feet brick-red. Length 25 to 30 inches; extent 48; wing 14 to 15; tail 7; bill 6, or rather more; tarsus 3; weight 3¼ lb. Sexes alike.

This Curlew, as it is generally called, is common throughout the greater part of India, and is met with generally in pairs or small parties, now and then congregating in flocks. It feeds chiefly on dry land, over grass plains, ploughed lands, stubble fields, dry

paddy-fields, &c., now and then at the edge of a river or tank. It eats beetles, crickets, and all sorts of insects, occasionally crabs, prawns, and aquatic insects. Adams (No. 262, Birds of India,) under the head of *Falcinellus igneus*, has evidently this bird in view; he states that it feeds on carrion, (?) beetles, scorpions, &c., and associates with Rooks on the frontier of the Punjab. It is accused by many natives of consuming much grain.

It breeds on the tops of high trees, making a large nest of sticks, and laying two to four white eggs. It has a wild, melancholy scream, which it often utters from the top of some tree, or occasionally during its circling flights. It makes an excellent chase with a *Bhyri*, flying strongly and rapidly, and often escaping from its pursuer. The flesh is very good, at times really excellent.

Other species of this group are *Tant. calvus*, Gmel.; *Ibis comata*, Ehrenberg; and *I. cristatus*, Gmel.; respectively the types of restricted *Geronticus*, *Comatibis*, and *Lophotibis* of Reichenbach. *Ibis carunculata*, Rüppell, is the type of *Bostrychia* of the same systematist; and *Tant. hagedash*, Latham, and *Ibis olivacea*, Dubus, belong to *Hagedashia*, Bonaparte. They are all from Africa. There are several Ibises from South America, forming a peculiar group, *Phimoseæ*, Bonap.

The last of the three Indian Ibises belongs to another section, *Eudociminæ*, Bonaparte, distinguished by a slender channeled bill, and scutellated feet.

Gen. FALCINELLUS, Bechstein.

Char.—Bill long, slender; tarsi lengthened, scutellated anteriorly; toes long and slender, otherwise as in the last; wings, with the 2nd and 3rd primaries longest. Face nude. Cosmopolite.

943. **Falcinellus igneus**, GMELIN.

Tantalus, apud GMELIN,—BLYTH, Cat. 1620—SYKES, Cat. 189 and 191—JERDON, Cat. 325—I. falcinellus, TEMM.—GOULD, Birds of Europe, pl. 311—F. bengalensis, BONAPARTE, ex LICHTENSTEIN—*Kewari*, H.—*Kowara* or *Kowar*, in Purneah—*Kala kachiatora*, Beng.—*Tati kankaram*, Tel.

THE GLOSSY IBIS.

Descr.—Adult, head, neck, breast, upper back, and all the under parts fine chesnut-red, tinged with brown on the head;

lower back, rump, wing-coverts, quills and tail dark green, with bronze and purplish reflections.

Bill dull pale greenish; irides brown; lores and nude orbits pale green; legs blackish green, with a blue garter above the knee. Length 22 inches, extent 38; wing $10\frac{3}{4}$; tail; bill at front 6; tarsus $4\frac{1}{2}$.

The young birds of the year are ashy-brown, with white markings on the head and neck. After the moult they are brown on the head and neck, the feathers whitish edged; the back greenish-brown; wings and tail as in the adult, but less glossed; the lower neck, belly, breast, and thigh-coverts, dusky black, with more or less greenish reflections on the breast; lores whitish.

The Glossy Ibis is found in vast numbers in India during the cold weather, frequenting the edges of large tanks, jheels, and rivers, also swamps and inundated paddy-fields, and feeding on molluscs, crustacea, insects, and worms. Adams states that it feeds on carrion, beetles, scorpions, &c.; but I think that he has confounded this bird with the last. It flies in flocks, rapidly and with great regularity, and generally in the form of a wedge, and roosts at night in beds of large reeds. This Ibis is said to breed among reeds. It is most excellent eating, and has a tolerably loud call, often uttered in flight and when alarmed.

The Glossy Ibis appears to be spread over the whole world, being found throughout Asia, Australia, Africa, the South of Europe, and great part of America. Bonaparte, however, separates *I. peregrina*, Müller from Java, and *Ibis mexicana*, Vieill., as distinct species. It was considered sacred in Egypt, like the White *Ibis*, probably on account of its appearing after the inundation, and mummies of it are frequently found.

Other species of Falcinellus recorded are *F. guarauna*, L., and *F. erythrorhyncha*, Gould, both from America. A small section of American Ibises belonging to the present minor group is named *Eudocimus* by Wagler, and is restricted *Ibis* apud Gray, *Paribis*, Is. Geoffroy. One of these is the beautiful Scarlet Ibis, *Tant. ruber*, L., and there are two white species, *T. albus*, L., and *Ibis longirostris*, Wagler.

Ord. NATATORES.

Syn. *Palmipedes*, Cuvier.

Feet more or less fully webbed, the legs placed far backwards on the body, and the tarsi compressed, adapting them for swimming; bill and wings varied; plumage very thick and close, with a quantity of down next the skin, in some families impregnated with oil; the hind toe is occasionally absent and always small. In one family the toes are free, only bordered by a wide web.

The birds of this order are so variously organized, that few generalizations can be made. Some have the wings hardly developed, and live almost entirely in the sea, diving and swimming rapidly beneath the surface; others appear to spend the greater part of their lives on the wing, and are incapable of diving; whilst others both fly and dive well. The food of one family is chiefly vegetable, of all the others, fish, molluscs, crustacea or insects.

Like the *Grallatores*, some are capable of running at once from the shell, and soon feed themselves, (*Autophagi*); while others form rude nests on trees, on rocks, or among the herbage of the shore, and feed their young till they are able to fly (*Heterophagi*).

The divisions adopted in the present work are as follows, and are taken partly from Mr. Blyth, as having terminations conformable with those of the other tribes of birds:—

A. (Autophagous)—The young following the parent as soon as hatched.

Tribe 1*st.*—*Lamellirostres*, containing one family, the *Anatidæ*, or Ducks.

2*nd.*—*Mergitores*, Loons and Grebes.

3*rd.*—*Vagatores*, Gulls and Petrels.

B. (Heterophagous)—The young requiring to be fed for a longer or shorter period.

4*th.*—*Piscatores*, Cormorants and Pelicans.

5th.—Urinatores, Auks and Penguins, not represented in India.

The connections of this order are not very apparent. Some imagine that it is related on one side, through the Geese with the *Rasores;* others, through the Grebes with the *Coots.* Again, the Frigate Birds show a decided tendency towards the *Raptores.*

Tribe LAMELLIROSTRES.

Bill thick, depressed, broad, covered with a soft skin, the tip alone being horny; the edges in most furnished with numerous laminæ; wings moderately long, 1st and 2nd quills subequal, or 2nd longest.

The birds of this tribe form a very natural and extensive group, as well marked and recognizable (with perhaps one exception), as that of the Pigeons. The chief characteristic is the bill, which differs from that of all others in being furnished at the edges with thin horny lamellæ, more or less numerous and close, which serve as a sieve, allowing the water to pass through, but retaining any particles of food. The bill, moreover, is covered by a soft skin, the tip alone being horny, and this is called the nail or *dertrum,* and is often coloured differently from the other portion.

Geese and Ducks chiefly frequent fresh waters, marshes, lakes, and rivers; a few preferring salt water. They feed mostly on vegetable matter, but also on worms and insects, &c.; a few only taking fish. Most of them lay numerous eggs, white or greenish, and the young follow their parent as soon as hatched. The majority nidificate on the ground, others on trees or even rocks. Many are migratory, and their flight is generally powerful, and in many rapid. They may be said to represent the *Rasores* in this order in consequence of their easy domestication, numerous eggs, and the excellent food they afford.

The sternum is large and wide, but of very thin texture, and has one fissure on each side; the tongue is very large and fleshy, with the edge toothed; the gizzard is large and highly muscular, and the cæca generally long, with a long intestinal canal. The trachea of the male is, in many, dilated near the bifurcation into capsules of varied form, and, in some, is elongated and enters

into a cavity in the keel of the sternum. In many instances the male has a large intromittent organ.

They may be divided into the following families:—

1*st.*—*Phœnicopteridæ*, Flamingoes, with uncommonly long legs and long neck.

2*nd.*—*Cygnidæ*, Swans, with lengthened neck but short legs.

3*rd.*—*Anseridæ*, Geese, &c. The legs generally placed more forward than in the next family.

4*th.*—*Anatidæ*, Ducks, with short legs placed far back.

5*th.*—*Mergidæ*, Mergansers, with the bill distinctly toothed at the sides.

Fam. PHŒNICOPTERIDÆ.

Neck and legs of enormous length; bill suddenly bent down. There is only one genus.

Gen. PHŒNICOPTERUS, L.

Bill high at the base, suddenly bent down, the margin lamellate and dentate; legs very long; tibia bare to a considerable extent; tarsus scutellate; feet short; wings moderate, 1st and 2nd quills sub-equal, longest; neck very long.

The Flamingoes have the fleshy tongue and anatomical structure of the Ducks; the bill is laminated to allow the superfluous water to pass off, and they appear to feed on various minute animal and vegetable substances which they find in the soft mud of the lakes and salt-water lagoons they frequent, for scooping up which, their peculiar bill appears well adapted; when searching at the bottom, their heads are bent forwards till the deflected portion of the bill is horizontal. The diameter of the gullet in these huge birds is very minute.

The Flamingoes were long placed among the *Grallatores*, in consequence of their very long legs, and are still so classed in many foreign works on Ornithology. Swainson, I believe, was one of the first who perceived their affinities to be with the *Anserinæ*, and I cannot understand how any one can ignore the resemblance. The bill is quite that of the Ducks, and its relations with this family are recognised by various races. The Calmucs and Russians

call the Flamingo the Red Goose, and its Hindustani name also expresses its affinity to the Anserine group.

944. Phœnicopterus roseus, Pallas.

P. antiquus, Temminck—Blyth, Cat. 1750—Sykes, Cat. 181—Jerdon, Cat. 373—also P. minor, apud Jerdon, Cat. 374?—Gould, Birds of Europe pl. 287—*Bag-hans*, H., *i. e.*, Heron-goose—*Raj-hans* of some—*Kan-thunti*, Beng.—*Pu-konga*, Tel., also *Samdrapa chilluka*, *i. e.*, Sea-parrot—*Pu-nari*, Tam.

The Flamingo.

Descr.—Throughout of a rosy white, the rose colour more marked on the head, back, and tail; wing-coverts, (except the primary-coverts, which are white) and the tertiaries fine rosy red; quills black, the last of the secondaries white; lower wing-coverts black.

Bill rosy, black at the tip; irides pale golden-yellow; legs and feet pale rosy-red. Length 4 feet 4 inches; wing 16½; tail 6; bill 4; tarsus 12; mid.-toe 3½. Weight 10 lbs.

The female is smaller, and the young birds have the upper plumage, especially the wing-coverts, mixed with brown and dusky spots, and hardly any rosy tinge.

I was at one time inclined to believe in the existence of another species, which, I was informed, visited India during the cold weather in small flocks, and in my Catalogue I called it *P. minor*, after Temminck. Mr. Blyth was also of opinion that there was a second species (and Bonaparte named it *Ph. Blythii*); but, in his Catalogue, he gave it as a variety of the other. Temminck's bird, from Africa, is figured by him in Pl. Col. pl. 419, and is stated to be very distinct.* Some specimens in the Museum of the Asiatic Society are distinctly smaller; the leg shorter, only 9 to 10 inches instead of 12; but the bill is nearly equally large, and the wing only 1 inch or so shorter. Two of these appear in adult plumage; and there are others quite similar in dimensions, evidently in younger plumage, and one with a slightly rusty coloured head. All these however are probably females, and

* Mr. Blyth, however, has quite recently written me that it is very like the small Indian race.

without more information, I shall consider them to be females of the common species.*

The Flamingo is found, here and there, throughout India, is very rare in some parts, and is perhaps chiefly found not far from the sea-coast. It is very abundant near Madras, in the Pulicat lake; also between Madras and Pondicherry, and south towards Tuticoreen; it is also met with in the Northern Circars, at the great Chilka lake, south of Cuttack, and occasionally near the mouth of the Hooghly and some of the Soonderbun rivers. In Central India and the Deccan, flocks generally visit some of the larger tanks during the cold weather, and they are also now and then met with in Northern India. Adams states that they are not uncommon on the Punjab rivers and lakes, during the cold weather.

The Flamingo appears to be found throughout the south of Europe, Africa, and great part of Asia. It feeds on minute molluscs, small insects and crustacea, worms, &c., which it scoops up by its inverted bill together with the soft mud from the bottom of lakes, salt water lagoons, &c., subsequently rejecting the inorganic matter with the water through the laminæ of its bill; I have however generally found some mud in the stomachs of those that I have examined. It also eats confervæ, and other soft vegetable matter, and, in confinement, will eat bran mixed with water, boiled rice, &c.

It is said to form a large conical nest of mud, or mud and grass, and to sit astride on the top of it. A late writer, however, states that it lays its eggs on any slight elevation in swamps, generally on a narrow path between two ditches, and that many nests are placed together in a line. The eggs are two in number, dull white and with a very rough chalky surface. Flamingoes do not, that I am aware of, nidificate in this country.

Flamingoes are very wary birds; during the heat of the day they rest in the water, drawn up in long lines, with sentinels on either side which give warning of danger by a trumpet-like call, something

* M. Verreaux has characterized a small race from Africa as *P. erythræus*. It resembles the present species, but is smaller; the tarsus only 10¾ inches; the wing 14¾, and the head and neck are aurora red. It is probable that this species, if distinct, may occasionally visit Western India, and perhaps be my small Flamingo, Cat. 374.

like the cry of the wild goose, a cry which is occasionally repeated during flight. When feeding, they are more easily approached. They are excellent eating. I have seen Flamingoes kept alive at Hyderabad in the Deccan. It has been stated that they sleep on one leg, with the neck bent back, and the head under the wing. Nuttall says that they run swiftly, but I have never seen them, even when in danger, move at any other pace than a stately, moderately rapid walk. They are said to swim well with the port of Swans, but I have never seen them do so.

Other species, besides *P. minor*, T., from Africa, are *P. ignipalliatus* of South America, and *P. erythræus*, Verreaux, if distinct from our species.

Fam. CYGNIDÆ.

The Swans are well characterized by their enormously long necks and moderate feet. They have the bill high at the base and of equal breadth throughout, are of very large size, and feed on the seeds and roots of water plants, and also on grass. Their intestines are very long, as are their cæca. They possess 23 cervical vertebræ. The trachea has no inflation or labyrinth. The sexes are alike, and they have no seasonal change. The male guards the female during incubation.

In one group the trachea, after making a slight curve towards the ridge of the sternum, enters the lungs, and there is usually a fleshy caruncle over the base of the upper mandible. To this section belongs *Cygnus olor*, or the Mute Swan, of which *C. immutabilis* is the wild race. Others of this group are *C. nigricollis* and *C. anatoides* of South America; and the celebrated black Swan, *C. atratus*, which is separated as *Cehnopis*, Wagler.

The birds of the next group have the trachea elongated, as in the Cranes, and entering a cavity in the sternal ridge. They have no protuberance on their bill, are all white, with black feet, and are restricted to the Northern Hemisphere. To this group belong the Hooper Swan, *Cygnus musicus*, and Bewick's Swan, *C. Bewickii*, of Europe; and two American species, *C. buccinator* or the Trumpeter Swan, and *C. Americanus*.

The Hooper Swan, *Cygnus musicus*, is said to have been met with in Nepal, and a head and a foot, stated to be from that country, are in the British Museum; if killed there, however, it could only have been a very accidental visitor, and was more probably brought from the Tibet side of the Hills.

The genus *Coscoroba*, Bonap., founded on *Anas coscoroba*, Gmelin, (*A. chionis*, Illiger) from South America, is placed by Bonaparte at the end of the Swans.

Fam. ANSERIDÆ.

Bill moderate or short, narrower in front than behind, more or less raised at the base; legs rather long, set more forward on the body than in the Ducks; plumage of the sexes differing but slightly.

This family comprises several distinct groups, and is divided into the following sub-families. :—

1*st.*—*Anserinæ*, True Geese.
2*nd.*—*Cereopsinæ*, New Holland Geese.
3*rd.*—*Plectropterinæ*, Spurred Geese.
4*th.*—*Nettapodinæ*, Anserine Teal.
5*th.*—*Tadorninæ*, Shieldrakes, &c.

Sub-fam. ANSERINÆ, True Geese.

Bill short, high at the base, conical; nail large, convex; laminar teeth more or less exposed, short; nostrils median, large; tarsus thick, lengthened; feet of moderate or rather small size; wings ample, moderately long; 1st and 2nd quills longest; tail short of 16 or 18 feathers; legs nearly central; tibia feathered nearly to the joint; neck moderately long; trachea simple.

Geese, as here characterized, have a large heavy body, with a tolerably long neck and a small head. The wings are long and powerful, and the hind toe is very small. They live in flocks, breeding for the most part in polar regions, and migrating in winter to more genial climates; when flying, they maintain regular long lines, and emit loud clanging calls. They walk well on land in consequence of the central position of their legs. They feed entirely on vegetables, grazing on grass and young corn, their short stout bill being well suited for biting off the shoots; and they spend the heat of the day on sand-banks in rivers, or in the centre of large lakes. They

make large nests of grass, &c., on the ground, in marshy places, and lay several whitish eggs. During incubation, the males of many live apart from the females, and assemble in flocks near the sea-coast. The first down of the nestlings is mottled. Four or five species visit India in the cold weather, and probably others will be identified hereafter.

Gen. ANSER, Brisson.

Char.—Bill very high at the base, about the length of the head; the lamellæ, tooth-like, very apparent externally; nostrils a little behind the middle; toes moderately long, claws short and curved; neck moderately long. Of large size and grey plumage, the bill pale, and legs usually reddish.

945. A. cinereus, MEYER.

BLYTH, Cat. 1755—Anas anser, LINN.—A. ferus, GESNER—A. vulgaris, PALLAS—GOULD, Birds of Europe, pl. 347—*Hans*, H. also *Haj*—, *Bannaia-hans*,—*Kallauk*—*Karhans* at Bhaugulpore.

THE GREY GOOSE.

Descr.—Head and neck clove-brown, tinged with grey; the forehead whitish; back, scapulars, greater and middle wing-coverts clove-brown, the feathers broadly edged with greyish-white; lower back and upper tail-coverts bluish-ashy; lesser wing-coverts and base of the primaries bluish-grey; primaries black, shaded with grey, with the shafts white; secondaries black, edged with white; rump and sides of the upper tail-coverts white; tail brown edged with white, the outermost one almost wholly white; breast and upper belly greyish-white, undulated with bars of a deeper tint; lower abdomen and under tail-coverts white.

Bill fleshy or dull orange-red, the tip whitish; irides deep brown; legs livid fleshy or tile-red. Length 30 to 32 inches; wing 18; tail 6; bill at front $2\frac{5}{8}$; tarsus 3; mid. toe and claw $3\frac{1}{4}$; extent $4\frac{1}{2}$ feet; weight 9 to 12 lbs.

The common wild Goose, or grey lag Goose of England, is a common winter visitant to the North of India, extending its migrations to Central India, but rarely seen further South. It is sometimes met with in small parties of from four to twenty; occasionally in vast flocks, which feed on young corn, grass, &c., and,

during the heat of the day, rest on some sand-bank in the large rivers, or in the middle of a tank. This Goose is a wary bird, approached with difficulty when feeding, but may occasionally be stalked when on the bank of a river or tank; I have often killed it from a boat. The flesh is excellent. In the wild state it breeds in Northern Europe and Asia, making a large nest among the rushes, and laying from eight to twelve whitish eggs. It is the origin of the domestic Goose. It is very similar to, and is occasionally confounded with the Bean-goose of England, *A segetum*, but that species is smaller, with the bill proportionally smaller and differing in colour.

946. **Anser brachyrhynchus**, Baillon.

Blyth, Cat. 1756,—A. phænicopus, Bartlett.

The pink-footed Goose.

Descr.—Head and upper part of neck brown, the lower part of the neck reddish-ashy; body above brownish cinereous, with white undulations; the longest of the scapulars edged with white; upper tail-coverts black, a few of the longest white; lesser and median wing-coverts bluish-ashy, edged with white; the two first primaries bluish, the others black; tail black; breast and upper abdomen ashy-whitish; lower abdomen and under tail-coverts pure white.

Bill much smaller than in the last, fleshy-red or purplish, the base and the nail black; feet pinkish-red. Length 27 inches; wing 17; tail 5½; bill at front 1¾; tarsus 3; middle toe 3.

This species is said to occur in the Punjab and Western India, Mr. Blyth stating that he has seen an undoubted drawing of this Goose made in the Punjab. Captain Irby also records it from Oudh. It is an inhabitant of Northern and Central Europe.

947. **A. albifrons**, Gmelin.

Anas apud Gmelin—Gould, Birds of Europe, pl. 289.

The White-fronted Goose.

Descr.—Head and neck brownish, shaded with reddish; forehead and part of the cheeks white, surrounded by a dark brown band; body above dull ashy-brown, with reddish-white margins to the

feathers; upper tail-coverts dark ashy, the longest white; lesser wing-coverts dull brown, slightly edged rufous; middle coverts ashy-bluish, tipped white; primaries ashy-grey, black at the tip; secondaries black; tail ashy, the feathers edged and broadly tipped with white; plumage beneath brownish on the breast and flanks, passing into whitish grey with spots and wide cross bands of black on the lower part of the breast, the upper abdomen and flanks; lower abdomen and under tail-coverts pure white.

Bill purplish-red, orange-yellow round the nostrils, on the middle of the upper mandible and the edges of the lower mandible; tip whitish; irides deep brown; legs orange, the nails white. Length 27 inches; wing 17; bill at front $1\frac{7}{8}$; tarsus 3; mid-toe $2\frac{3}{4}$.

The white-fronted Goose has, within our territories, only been observed hitherto in the Punjab, Adams stating that it is a winter visitant to the lakes and rivers of that province. It is found throughout Europe, Northern Asia, and North America. It is stated to frequent marshes and rarely to visit corn-fields.

948. Anser erythropus, Linn.

Newton, Ibis, 2, p. 406—A. minutus, Naumann—A. medius, Temminck—Bree, Birds of Europe, pl.

The Dwarf Goose.

Descr.—Top of head, forehead, throat, front of cheeks, and the under and upper tail-coverts pure white; the rest of the head, neck, and crop, grey, with those parts nearest the white front of the head, darker; scapulars and back, dark brown grey, with transverse lighter bands; upper wing-coverts blue-grey; lower, the same colour as the back, edged with white; primaries, of the same blue-grey as the upper coverts; secondaries black; tail grey, margined with white at the tip, and white at the base; abdomen black, bordered with white, and the flanks the same dark grey-brown as the back, each feather edged with lighter and separated from the edge of the wing, when folded, by a white streak.

Bill orange*; feet and legs red. Length 22 inches; wing 15; tail $4\frac{1}{2}$; weight 4 lbs.

* Mr. Bree, whose description of this Goose I have copied, in his specific character gives the beak black, but in the description orange. Probably the nail only is black.

Mr. Newton first showed that this little Goose was the true *erythropus* of Linnæus, and that this name had been improperly applied to the last species. Captain Irby mentions having observed this Goose in Oudh. It is chiefly an inhabitant of Northern Europe, is occasionally taken in Central Europe, and is said not to be uncommon in Greece. It also inhabits Northern and Central Asia.

The next species has been sometimes placed under *Bernicla*, Stephens, and latterly has been separated as *Eulabeia* by Reichenbach. It appears to be intermediate between the Bernacle Geese and the true Geese, and I shall not give it distinct generic rank.

The teeth of the mandible are distinctly visible at the base, which they are not in true *Bernicla*, the bill is larger and the feet are reddish.

949. **Anser indicus**, Gmelin.

Blyth, Cat. 1757—Jerdon, Cat. 375—Gould, Cent. Him. Birds, pl. 80.

The Barred-headed Goose.

Descr.—Head white, with two blackish bars on the occiput and nape; back of neck hair brown, sides of neck white; upper plumage very pale ashy, the feathers edged with whitish and tinged with pale reddish-brown; lower back and rump pure pale ashy-grey, sides of the rump and upper tail-coverts whitish; tail grey, white tipped; wing-coverts pure ashy; quills grey, dusky towards the tip, and gradually becoming darker on the secondaries; tertials brownish-grey; beneath, the chin and throat white; neck brownish-ashy, passing gradually into cinereous on the breast, whitish on the upper abdomen and the lower abdomen; vent and under tail-coverts white; flanks cinnamon-brown with pale edgings.

Bill yellow; irides brown; legs orange. Length 27 inches; wing 17; tail 6; bill at front 2; tarsus $2\frac{3}{4}$; mid-toe $2\frac{3}{4}$; weight 7 to 8 lbs.

This Goose appears to be peculiar to India, and probably the adjacent countries north of the Himalayas, where it breeds, as it is not recorded by Pallas as a bird of Northern or Central Asia. It is chiefly a winter visitant to India, arriving in Northern India towards the end of October or beginning of November, and

leaving in March. It is occasionally met with in immense flocks of many hundreds, usually in smaller parties. It grazes on the river banks and fields of corn, chenna, &c., retiring about 10 or 11 A. M. to some tank or river, where it reposes during the greater part of the day, returning to the fields in the afternoon. A writer in the *Bengal Sporting Magazine* states that this Goose is found in immense abundance both in Bundlekund and in the country between Agra and Gwalior; but that the larger kind (*A. cinereus*) is not met with in the latter locality. I once saw a couple of these Geese in the extreme south of India in August, in a small sequestered tank. This pair may have been breeding there, but perhaps they were wounded or sickly birds. This Goose probably breeds in the large lakes beyond the Himalayas, where swarms of water-birds have been observed by various travellers in summer. It is excellent eating, but perhaps in this respect inferior to the Grey Goose.

There are several other wild Geese found in the Northern Hemisphere, the distinctions between some of which are rather obscure. Among them are *A. segetum*, the Bean Goose, which, besides being smaller than *cinereus*, has the nail of the bill black. The Bernacle Geese have the bill smaller than the true Geese, and the lamellæ are short and not exposed. The legs are generally black. As previously stated, these are by some placed in a distinct genus, *Bernicla*, Stephens. The Barnacle Goose, *B. leucopsis*, is smaller than the wild Goose, and is remarkable for the fable which was believed in by our ancestors, that it took its origin from the shell barnacles (*Lepas*); the same tradition was connected with the Brent Goose, *B. brenta*. Another Asiatic species is *A. ruficollis*, Pallas. The Snow Goose, *A. hyperboreus*, has the teeth very prominent, and has been separated as *Chen*. It is white with black primaries. A second species of this group is *A. cærulescens*, L., formerly considered the young of *hyperboreus*. It has been killed in Britain. *A. cygnoides*, L., the Chinese or knobbed Goose, was considered by Cuvier to belong to the Swans, but is strictly a Goose with only 16 cervical vertebræ.* It is domesticated in China, and breeds very readily with the

* Quite recently a Sportsman told me that he had shot a large brown-necked Goose in the interior of the Himalayas. Could it have been this species? or *A. ruficollis*?

common Goose. Blyth considers the common domestic Goose of India to be a hybrid between this and *A. cinereus*. *A. canadensis*, L., a large Goose with a long black neck, was also considered to belong to the Swans by Cuvier. It is now classed among the Bernacle Geese. A handsome group of Geese, typified by *A. picta*, Pallas, and *A. magellanica*, Gmel., is found in the icy regions, both Arctic and Antarctic, and has been named *Chloephaga* by Eyton; *A. jubata*, Lath., from Australia, has been separated as *Chlamydochen*. The former of these, however, have tracheal labyrinths, and, if they do not belong to the *Tadorninæ*, unite those birds to the Geese.

The sub-family *Cereopsinæ* comprises only one genus and one species, *Cereopsis Novæ Hollandiæ*, which has a small bill extending back on the forehead, long legs bare above the joint, and a tracheal labyrinth. It seldom enters water. This curious Goose appears to have some affinities with both the *Rasores* and *Grallatores*.

Sub-fam. PLECTROPTERINÆ, Spurred Geese.

Wings generally with one or more spurs on the shoulder. Bill, in most, furnished with a boss or protuberance at the base. Legs in general long. Plumage glossed black and white. Sexes alike, or nearly so.

The Spur-winged Geese form a small group typified by *Anas gambensis*, L., of Africa, of which the Muscovy Duck, *A. moschata*, is an aberrant form, having unusually short legs. The male is said to guard the nest during incubation. There is only one species in India.

Gen. SARKIDIORNIS, Eyton.

Syn. *Plectropterus*, Leach (partly).

Char.—Bill lengthened, of nearly equal width throughout; that of the males usually furnished with a naked, compressed, fleshy protuberance on the culmen; wings with one or more tubercles or blunt spurs at the shoulder; 1st and 2nd primaries sub-equal and longest; legs lengthened; feet large; tarsus with sub-quadrate scales. Of large size. Plumage glossy black above. Sexes nearly alike in colour, but the males much larger than the females.

The Spur-winged Geese are found in the hot regions of Africa and India, where they are permanent residents.

950. Sarkidiornis melanonotus, Pennant.

Anser apud Pennant, Ind. Zool., pl. 11—Blyth, Cat. 1763—Sykes, Cat. 213—Jerdon Cat. 379—Pl. Enl. 937—*Nukta*, H. and Mahr.—*Jutu chilluwa*, Tel.—Comb-duck of Sportsmen in Madras and Bombay.

The Black-backed Goose.

Descr.—Head and neck white, spotted with glossy black, the top of the head and back of the neck mostly black; interscapulars and scapulars, black glossed with purple; back ashy-grey, becoming dusky on the rump; the upper tail-coverts glossy green; wing-coverts glossed green; quills black; tail black; all the lower parts pure white; bill and protuberance black; irides dark brown; legs greenish plumbeous.

Male—Length 30 to 34 inches; wing 16; tail 6; bill at front 2½; height of protuberance 2; tarsus nearly 3; mid-toe and claw 3¼. Weight 6 lbs.

The female is much smaller, less brightly colored, more spotted on the neck, and she wants the fleshy boss at the base of the bill. Length about 26 inches; wing 12 to 14.

This Goose is very common in Central and Western India, less so in the extreme south, and is very rare in Lower Bengal. It is generally seen in small parties from four to ten, but occasionally in flocks of above a hundred: it chiefly frequents grassy tanks, and is not unfrequently seen in paddy fields. During the rains, it wanders about a good deal, and may often be seen feeding in very small tanks, or even in temporary pools of water. It breeds in this country in July or August, in grass by the sides of tanks, laying six to eight whitish eggs.

It is not a particularly wary bird, and may generally be approached tolerably closely. Its flight is not very rapid. This Goose is not held in very high esteem for the table, but at some seasons is most excellent, and the young birds are especially

delicate. It is found in Ceylon and Burmah, apparently not extending into Malayana.

Other species of this genus are *S. africana*, Eyton, and *S. regia*, Mol., from South America, (united to the Indian species in Gray's Genera of Birds). *Plectropterus gambensis*, L., is the most typical member of the group and has the longest legs. *Anseranos melanoleuca*, (Latham) from Australia, is a very remarkable type. The hind toe is long and nearly on the same plane as the anterior toes, and the feet are only webbed at the base; were it not for its completely Duck-bill, it could not be classed here. The Musk-duck already alluded to, *Cairina moschata*, (placed by Gray among the true Ducks,) is originally from South America; it breeds freely with the common Duck, but the offspring are not fertile.

Sub-fam. NETTAPODINÆ. Bonap.

Of small size; bill small, high at the base.

These little ducks or rather geese, have much the colouring of the last group, of which they may be said to be miniatures, but the bill is still shorter and higher at the base, more anserine in its character, and Gray, indeed, places them among the *Anserinæ*. Their peculiar aspect, however, and habits demand a separation. Representatives of the group occur in Africa, India, and Australia.

Gen. NETTAPUS, Brandt.

Syn. *Anserella*, Swainson—*Microcygna*, Gray.

Char.—Bill small, high at the base, gradually narrowing in front, the lamellæ short, distant, concealed; nostrils small near the base; wings rather short; tail short, rounded, of twelve feathers; tarsus short; feet long, hind toe short; claws short and curved.

951. Nettapus coromandelianus, GMELIN.

Anas apud GMELIN—BLYTH, Cat. 1766—SYKES, Cat. 214—JERDON, Cat. 378. Bernicla girra, GRAY—Dendroc. affinis, JERDON, Cat. 378 bis., winter dress—*Girja* and *girri*, H. and Mahr.—*Ghangerēl* and *Gangania* Beng.—*Buliya hans* at Dacca—'Cotton Teal' of many Europeans.

The White-bodied Goose-teal.

Descr.—Top of the head black; back, scapulars and wings richly glossed with purple and green, the purple prevailing on the back and scapulars, the wing-coverts' and base of the quills green; rump blackish in the middle, white at the sides; upper tail-coverts cinereous brown with pale mottlings; tail blackish brown; primary quills with a large white patch tipped with black on their terminal half, the white gradually diminishing in extent; the secondaries only tipped with white; tertials pure black, glossed green externally, purplish within; face, back of head, and whole neck and under parts pure white, with a black collar round the lower part of the neck; flanks white with fine zig-zag brown lines; vent and under tail-coverts mottled dusky and white.

Bill black; irides crimson; legs greenish ochry-yellow tinged with black at the breeding season. Length 13 to 14 inches; wing 6½; tail 2¾; bill at front 1; tarsus 1; mid-toe 1½. Weight 9 to 10 ounces.

The female is duller and more brown, above faintly glossed, the primaries want the white patch, the sides of the rump and upper tail-coverts are pale brown; the top of the head is dusky, and there is a dark stripe through the eyes; the neck is mottled with dusky lines; the under parts are dirty white, the flanks pale brown, and under tail-coverts whitish.

This pretty little Goslet (as it may be named) is found over the whole of India, Ceylon, Burmah, and Malayana, in great abundance in many parts, more rarely in the North-western Provinces. It frequents weedy and grassy tanks in moderate or rather large flocks, flies with great rapidity, uttering a peculiar cackling call, and is, when undisturbed, very familiar and unwary. It breeds generally in holes in old trees, often at some distance from water, occasionally in ruined houses, temples, old chimneys, and the like, laying eight or ten (sometimes, it is stated, as many as fifteen,) small white eggs. The young are clad with copious black down, and are, as a writer in the *Indian Sporting Review* observes, literally turned out of the nest by the parent as soon as they are hatched, and led to the neighbouring water. The same writer states, that the ducks alone attend to the duties of incubation, the drakes

collecting together in small flocks. I doubt if this is always the case, as I have on more than one occasion seen a pair fly off a tree in which they had a nest. This bird is not in general held in high estimation for the table; still at times it is excellent, and one writer says 'delicious.' The peculiar shuffling gait of these ducks when on land has been noticed by Mr. Blyth, who states 'that after walking a few steps they always squat.' In the wild state they probably never alight on the land.

A very closely allied species is *N. albipennis*, Gould, from Australia, formerly considered identical; and there is another still more beautiful species from the same country, *N. pulchellus*, Gould. The Australian species are described by Gould as nestling on the ground. Another species is found in Madagascar, *N. auritus*, considered by Gray as the type of *Nettapus* (as restricted), the Indian species being classed under *Anserella*, Swainson.

Sub-fam. TADORNINÆ.

Bill more or less raised at the base, and flattened towards the tip. Plumage more or less rufous.

This group comprises the Shieldrakes and Whistling-teal of hot countries, which, though not separated by Gray from the true Ducks, form a very distinct division. They have the bill rather large, and stand high on their legs, which are not set far back. They may be said to be intermediate between Geese and Ducks. Some have a speculum or wing-spot like the Ducks, and an inflated vesicle on the trachea; but the voice is rather that of a Goose than a Duck; the plumage is only moulted once a year; there is no seasonal change, and there is but little difference between the plumage of the sexes. They are chiefly vegetable feeders, some indeed grazing like Geese, and they have very long and slender intestines. They are for the most part inhabitants of warm climates and of the Southern Hemisphere.

Gen. DENDROCYGNA, Swainson.

Char.—Bill rather large, lengthened, of uniform width, slightly elevated at the base; wings short, broad, rounded, 2nd, 3rd, and 4th primaries sub-equal and longest; secondaries long; tarsus long and stout; feet large, hind toe rather long.

The Whistling-ducks are found in the warmer regions of both Continents. They build either on the ground or on trees. Some have the toes not fully webbed. They are classed by many apart from the Shieldrakes, and in their structure somewhat resemble the *Plectropterinæ*, but their tints are those of the Shieldrakes, though they want the wing-spot. Gray places them in *Anatinæ*. Two species occur in India.

952. **Dendrocygna awsuree**, Sykes.

Mareca apud Sykes, Cat. 220—Jerdon, Cat. 376—D. arcuata, Horsf., apud Blyth, Cat. 1762, and others—A. caryophyllacea, apud Sundevall—*Silli*, H.—*Saral*, Beng.—*Harrili hans* in East Bengal— *Yerra chilluwa*, Tel.

The Whistling-teal.

Descr.—Head and occiput dull wood-brown; face, ears, and neck, pale whity-brown, becoming darker on the back of the neck and upper back, and faintly edged with pale rusty; back and scapulars dusky black, broadly edged with rusty-brown; rump glossy black; upper tail-coverts chesnut; tail brown with slightly paler edges; lesser and median wing-coverts fine rich marone-red; greater coverts and all the quills dusky black; beneath, the chin and throat albescent; the neck whity-brown, passing into brown, yellowish on the lower neck, and gradually merging into the deep ferruginous or light chesnut of the whole of the lower surface; vent and under tail-coverts albescent.

Bill blackish; irides brown; orbits bright yellow; legs and feet dark plumbeous. Length about 18 inches; extent 27; wing 8; tail 2; bill at front $1\frac{1}{2}$; tarsus $1\frac{3}{4}$; mid-toe $2\frac{3}{4}$.

This species is sometimes confounded with *D. javanica*, Horsf., (*arcuata*, Cuvier), but appears to differ in wanting the lunules on the neck and breast, in the upper tail-coverts being marone, and in its somewhat smaller size. It may be the variety indicated by Horsfield under the name of *Meliwis batu*.

This Whistling-teal is generally spread throughout India and Burmah, and is a permanent resident. It associates, in the cold weather, in numerous flocks, frequenting by preference wooded

tanks or weedy jheels. The flight is slow and rather heavy, and during flight it frequently utters the peculiar sibilant, whistling call from which it derives its popular name. It generally, perhaps, breeds in the drier patches of grass on the ground, often at a considerable distance from water, carefully concealing its nest by intertwining some blades of grass over it. Occasionally, however, it builds its nest in hollows of trees, and not unfrequently in nests made of sticks, and that have, in some cases at all events, been used by Cormorants or small Herons. The eggs are white, generally six or eight in number.

Gould figures one of the Australian species under the name of *D. arcuata*, Cuv., the Javanese bird, but it appears to me to be quite distinct.

953. **Dendrocygna major**, Jerdon.

Jerdon, Cat. 377—Blyth, Cat. 1761—Jerdon, Ill. Ind. Orn., pl. 23—D. vagans, Eyton, Mss—figured under that name in Fraser, Zool. typ.

The Large Whistling-teal.

Descr.—Head and neck chesnut, darker on the top of the head, whence a dark line extends down the back of the neck; chin, throat, and foreneck pale; in the centre of the neck there is a broad patch of small, whitish, somewhat hackled feathers; upper part of the back and scapulars deep brown, the feathers edged with chesnut; lower part of the back black; lesser wing-coverts dark marone, the other wing-coverts, wings, and tail, dusky black; lower plumage chesnut; under tail-coverts (and a few of the upper tail-coverts also) yellowish white; the feathers of the flanks much lengthened, chesnut on one side, and yellowish-white on the other.

Bill plumbeous; irides brown; orbits pale livid; legs and feet dark plumbeous. Length 21 inches; wing 9¼; tail 2¼; tarsus 2¼; mid-toe 3½; bill at front nearly 2.

This species of Whistling-teal appears to be generally spread throughout India, but is somewhat rare in most parts of the country: it is most common in the western districts. I found it tolerably abundant in the Deccan at Jalnah, indeed as common as the lesser

kind, but not breeding in that part of the country. Mr. Blyth has frequently obtained it from the Calcutta market, and I procured it occasionally in the Carnatic. I have no authentic record of its occurrence out of India, but it is probable enough that it occurs in Burmah, and may, perhaps, be the variety indicated by Horsfield as *Meliwis kembung*.

There are species of this genus in Africa and South America, one indeed, *D. viduata*, is said to occur both in Africa and America; also in Australia, as well as in some of the Malayan islands, and one species from Australia, has been separated as *Leptotarsis Eytoni*, Gould.

The birds of the next group have, like the Ducks, a brilliantly colored speculum on the wing. They stand high on their legs, and the down of the young is said to be pied.

Gen. CASARCA, Bonap.

Char.—Bill moderate, slightly raised at the base, depressed anteriorly, of uniform width, nail large; laminæ slender, very apparent; wings moderately long, when closed reaching to the end of the tail, which is short and slightly rounded, of fourteen or sixteen feathers; tarsus moderate, stout; toes long; hind toe lobed.

These are Shieldrakes with some of the habits of Geese, grazing in young cornfields. They nestle in deserted holes, also among rocks and on cliffs, often far removed from water.

954. Casarca rutila, PALLAS.

Anas apud PALLAS—BLYTH, Cat. 1768—JERDON, Cat. 386—SYKES, Cat. 215—GOULD, Birds of Europe, pl. 358—A. rubra, GMELIN—*Surkhab*, H. of Falconers—*Chakwa*, *Chakwi*, H.—*Chakra-baka*, Sansc.—*Bapana chilluwa*, Tel.—'Braminy Duck' of Europeans in India.

THE RUDDY SHIELDRAKE.

Descr.—Male, forehead and cheeks pale ochreous-yellow or ferruginous; the region of the eyes, crown, and nape, greyish-white; the rest of the neck ochreous-yellow, tinged with orange, surrounded by a glossy black collar nearly half an inch wide; the back and scapulars orange fulvous, some of the feathers edged

paler; upper tail-coverts glossy green-black; lesser and middle wing-coverts white; greater coverts green, glossed with purple; primaries black; secondaries glossy green; tertials bright fulvous; chin pale yellowish; breast and lower parts orange fulvous, deepest on the breast.

Bill black; irides dark brown; legs black. Length 24 to 25 inches; extent 44; wing 16; tail 7; bill at front $1\frac{3}{4}$; tarsus $2\frac{3}{4}$; mid-toe $2\frac{1}{4}$; weight 4 lbs.

The female is smaller, wants the black collar, and is more white about the forehead, chin, and face.

The Ruddy Shieldrake or Braminy Duck, as it is called in India, is a well known winter visitant to all parts of the country. It is generally seen, even at this season, in pairs or small parties, frequenting alike rivers, brooks, jheels, and lakes. It walks well on the ground and grazes in the young cornfields just like Geese; it also picks up seeds of grass, grain, &c. A writer in the *Indian Sporting Review* for 1854 states, that "it is often found devouring carrion on the banks of rivers, and is frequently seen banqueting in company with Vultures, and associating with such other villainous companions." This must be a very rare ocurrence; I have constantly, when on the Ganges and other large rivers, been on the watch to verify this observation, but as yet have never seen anything approaching to such a habit, and I have moreover questioned many sportsmen on the subject with a like result. Towards the close of the cold weather, the Braminy Ducks assemble in numbers, and on the Chilka lake I have seen thousands in one flock in April. The call is peculiar and Goose-like, (like a clarionet, says Pallas) sounding something like *à-oung*, and hence the name of *Aangir*, which, according to Pallas, is given to this bird among the Mongols, by whom it is held sacred.

It is found over the greater part of Central Europe, being occasionally even killed in Britain; also in Northern Africa, and great part of Asia, not extending however far north. It breeds across the Himalayas on rocks near lakes, as observed by Hooker and Adams respectively in Sikim and Ladakh; also in holes of walls, and occasionally in deserted holes in the ground. Salvin found it breeding on almost inaccessible cliffs in Northern Africa far from

water, along with Kites and Ravens, and he states that he procured four white eggs; other observers say that it lays from eight to ten. It has bred in the Zoological gardens, and reared four young ones. The Hindoos have a legend that two lovers for some indiscretion were transformed into Braminy Ducks, that they are condemned to pass the night apart from each other on opposite banks of the river, and that all night long each, in its turn, asks its mate if it shall come across, but the question is always met by a negative—"Chakwa, shall I come? No, Chakwi." "Chakwi, shall I come? No, Chakwa." Pallas states that it does not extend beyond 50° N. L., and that it usually nestles in Marmot's holes, also in rocks, and occasionally even in hollow trees. It is held sacred by the Mongols and Calmucs.

955. Casarca leucoptera, Blyth.

Jardine, Contrib. Orn. pl.

The White-winged Shieldrake.

Descr.—Head and neck mottled black and white, perhaps pure white in the adult; hind neck glossy black; rest of the upper plumage, including the tail, blackish brown; shoulders and wing-coverts pure white; greater coverts black; primaries dusky; secondaries slaty; tertials lengthened and wide, dusky, the outermost with a white border, showing as a white line on the wing; neck and breast glossy black; rest of the lower plumage dusky castaneous, dark brown on the flanks and under tail-coverts.

Bill and legs black. Length 28 inches; wing 15; tail 6; bill at front 3; tarsus $2\frac{1}{2}$; mid-toe $3\frac{1}{4}$.

This fine Duck has hitherto been only procured in Burmah, but I have received information of a so-called 'Black Goose' occurring in Dacca and other parts of Eastern Bengal, which, from the description, can be no other bird, and I have hence introduced it among the Birds of India, and hope this season to procure specimens.

Other species of this genus are *C. cana*, Gmelin; *C. tadornoides*, Jardine; and *C. variegata*, Gmelin, (*C. castanea*, Eyton). The two former from Africa; the last from South America.

Gen. TADORNA, Leach.

Char.—Bill short, high, and gibbous at the base, concave in the middle; the tip flattened and turning upwards, of nearly uniform breadth; the nail abruptly hooked; marginal lamellæ not projecting; wing tuberculated; tarsus moderate; feet rather short; tail of sixteen feathers.

The Shieldrakes are a well marked group, distinguished by the peculiar form of their bill. Their legs are set well forward, enabling them to walk with ease. The sexes are nearly alike. They breed in clefts of rocks or holes in the ground. Pallas remarks that they do not extend far North, and that they are very partial to salt lakes, feeding much on small crustacea.

956. **Tadorna vulpanser,** FLEMING.

BLYTH, Cat. 1769—GOULD, Birds of Europe, pl. 357—A. tadorna, LINN.—Tad. Bellonii, STEPHENS—*Shah murghabi* and *Nirajl*, in Sindh.

THE SHIELDRAKE.

Descr.—Male, head and upper part of neck deep blackish-green, with glossy reflections; lower part of the neck, back, wing-coverts, rump, and base of the tail white, the latter black-tipped; scapulars black; primaries black; greater-coverts, forming the speculum, rich bronzed green, three or four of the secondaries next the back, with their outer webs rich orange-brown; lower plumage white; a broad band of ferruginous brown across the breast, the ends passing upwards and uniting between the shoulders; a mesial line on the abdomen, widening at the vent, black; under tail-coverts pale reddish-brown.

Bill blood-red; irides brown; legs fleshy-red inclining to crimson. Length 23 inches; wing 13; tail 5; bill at front 2¼; tarsus 2; mid-toe 2; weight about 3 lbs.

The female has the colors somewhat more dull, and wants the pectoral band.

The Shieldrake is not common in any part of India, and is unknown in the South. It has been occasionally procured in the

Calcutta Bazar by Mr. Blyth, is sometimes met with in the N. W. Provinces, in Sindh, and at the foot of the Himalayas, and has been observed by Mr. Simson, B. C. S., in Eastern Bengal.

It occurs throughout Europe, the greater part of Asia, and Northern Africa, and breeds in deserted rabbit holes. The male at the breeding season acquires a large fleshy boss at the base of the upper mandible. The trachea is furnished with a labyrinth. The voice is goose-like.

Two other species of Tadorna are recorded, both from Australia, *T. radjah*, Garnot, and *T. nævosa*, Gould. The former of these, which is said to be somewhat intermediate between *Tadorna* and *Casarca*, has been made the type of *Radja* by Reichenbach, but Gray in his List of Genera applies that name to *Leptotarsis* of Gould, one of the Whistling-ducks. The other species has been made the type of *Stictonetta* by the same Systematist.

The Egyptian Goose, *A. ægyptiaca*, Gmelin, of which the genus *Chenalopex*, Swainson is formed, appears to belong to this group, rather than to the *Plectropterinæ*, to which it is referred by Gray. It has a small spur on the bend of the wing, its colouring is gay, and it has a single inflated labyrinth in the trachea. It was revered by the ancient Egyptians on account of the affection it displayed towards its young. Other species are recorded by Gray; some from America.

Fam. ANATIDÆ.

Bill broader at the base than high, shallow, depressed, of nearly equal width throughout, or wider at the tip; both mandibles with numerous transverse lamellæ; nostrils sub-basal or nearly median; tarsus moderately short, set far back on the body.

The Ducks differ from the last family by possessing a longer, shallower bill and shorter tarsus, and having the lamellæ of the bill more highly developed.

The sexes usually differ much in colour: the males of many assume the female plumage for a short period immediately after the breeding season, resuming their proper colouring at the autumn moult. They feed partly on vegetable matter and partly on minute worms, larvæ, &c. They have, for the most

part, a considerable dilatation of the œsophagus, and very long cœca. The trachea is almost always inflated at its bifurcation into cartilaginous labyrinths, of which the left is generally the larger.

They are divisible into two distinct groups or sub-families.

1. *Anatinæ*, True Ducks with the hind toe small and not webbed.

2. *Fuligulinæ*, Pochards or Sea Ducks, with the hind toe larger and bordered with a distinct web.

To these some add the *Erismaturinæ*, by others considered a group of the *Fuligulinæ*.

Sub-fam. ANATINÆ.

Hind toe not bordered by a membrane; head of moderate size; neck long and more or less slender; bill usually of even width throughout, or wider at the tip, not raised at the base; lamellæ numerous, fine; legs set a little more forward than in the next group, and they can walk tolerably well. The wings of most are long, and they fly rapidly.

The first genus has the bill much dilated at the tip.

Gen. SPATULA, Boie.

Syn.—*Rhynchaspis*, Leach—*Clypeata*, Lesson.

Char.—Bill long, the upper mandible wide, flattened in front of the nostrils and much dilated at the tip, or spatulate; the nail small; lamellæ very fine, like ciliæ, and projecting; tail slightly cuneate, of fourteen feathers; tarsus short. Cosmopolite.

In this genus, the lamellæ are developed to their greatest extent, and it is considered by some to be the type of the group.

957. Spatula clypeata, LINN.

Anas apud LINNÆUS—BLYTH, Cat. 1770—JERDON, Cat. 382—SYKES, Cat. 217—GOULD, Birds of Europe, pl. 360—*Tidari*, H. of some—*Alipat* in Sindh.

THE SHOVELLER.

Descr.—Male, head and upper part of the neck deep brown, with glossy green reflections; back dark umber-brown; scapulars

white; rump and upper tail-coverts brown, glossed with blackish-green, the sides of the rump white; tail brown, the feathers edged with white, and the outer one wholly white; lesser wing-coverts pale greyish-blue; median tipped with white; greater coverts, forming the speculum, brilliant green; primaries umber-brown; tertials rich purplish-black; lower neck and breast white; abdomen brownish-red; lower tail-coverts brown, glossed with blackish-green.

Bill brownish-black; irides yellow; legs orange. Length 20 inches; wing 10; tail $3\frac{1}{2}$; bill $2\frac{3}{4}$; tarsus $1\frac{1}{2}$; mid-toe $1\frac{7}{8}$.

The female has the head pale reddish-brown with fine dusky streaks; the rest of the upper parts dark brown, the feathers edged with reddish white; lesser wing-coverts slightly tinged with pale blue; speculum not so bright as in the male; under parts reddish, with large brown spots.

Towards the end of summer, the male bird puts on a peculiar livery, something like that of the female, but with the head black.

The Shoveller is found throughout India in the cold weather in small parties, often mixed with Gadwalls and other species; feeding near the edges of tanks in shallow water among weeds, chiefly on minute worms and larvæ, which it sifts from the mud. It is often late in leaving this country. It is found over both Continents, breeding, in temperate as well as in northern regions, in marshes, and laying ten to twelve oil-green eggs. The intestines of this Duck are very long, from 9 to 10 feet.

Other species of Shoveller are found in Africa, South America, and Australia; and *Malacorhynchus membranaceus* (Latham) is a somewhat allied form, from New Holland, with the edge of the bill prolonged on each side into a hanging membranous flap.

Gen. Anas, Linn. (as restricted).

Char.—Bill of moderate length, depressed throughout, not so deep at the base as wide, nearly of uniform width; the lamellæ short, projecting very slightly; the tip rounded; nostrils near the base; tail short, of sixteen feathers; the middle tail feathers of some more or less curled upwards.

There are two or three types of coloration in this genus, even as restricted. The first in our list has the most variegated and richest plumage, is of extensive geographical distribution, and makes long migrations.

958. **Anas boschas,** Linnæus.

Blyth Cat. 1771—Gould, Birds of Europe, pl. 361—*Niroji*, Sindh.—*Nil. sir*, H.

The Mallard.

Descr.—Male, head and upper half of neck deep emerald-green, approaching to black on the cheeks and forehead; a white collar round the neck; hind neck brown, with fine transverse grey lines; mantle chesnut-brown, with pale margins to the feathers; rump and upper tail-coverts blackish-green, the sides of the rump greyish white, with fine transverse undulating lines of clove-brown; scapulars greyish-white, with cross wavy brown marks, and some of the outer ones chesnut, with darker cross lines; wing-coverts and primaries brown; speculum deep prussian-blue, with purple and green reflections, bounded on each side by a double border, the inner one velvet-black, the outer white; tail greyish-brown, all the feathers bordered with white; the four central feathers curled upwards; lower neck and breast dark chesnut; abdomen and flanks greyish-white, with transverse undulating lines of brown; under tail-coverts blackish-green.

Bill pale greenish-yellow; irides red or hazel brown; legs orange. Length 24 inches; wing 11½; extent 36; tail 3½; bill 2½; tarsus 1¾; middle toe 2¼.

The female is smaller, and has all the upper plumage brown, of different shades, the feathers edged with pale reddish-brown; the head and neck creamy-white or yellowish with dusky streaks; speculum much as in the male; throat buff or whitish; breast and under parts yellowish-brown, obscurely spotted and streaked with darker brown; the central tail feathers not turned up. Bill greenish-grey.

The Mallard is apparently not very rare in the North of India, especially in the North-west, but I have never seen it South of the

Nerbudda, and have only shot it myself near Mhow, and lately in Kumaon. It has not yet occurred in Bengal. It appears to remain all the year in Cashmere, and to breed in that country, as Theobald found the eggs there in May. It is found throughout the Northern Hemisphere, breeding in temperate regions. It is one of the best Ducks for the table, and, as is well known, is the origin of our domestic Duck.

The birds of the next group have a plain and spotted character of plumage, and appear peculiar to tropical and southern regions.

959. **Anas pœcilorhyncha**, Pennant.

Blyth, Cat. 1773—Jerdon, Cat. 387—Sykes, Cat. 218—Hardwicke, Ill. Ind. Zool., pl.—*Garm-pai*, H. of some Falconers —*Bata* of some.

The Spotted-billed Duck.

Descr.—Top of the head and nape dark sepia brown, with some pale brown edgings; a dark brown line from the upper mandible through the eye ending in a point; supercilium, whole face, and neck dingy fulvous with small brown streaks, enlarging on the lower neck; upper plumage, including the lesser and median wing-coverts and scapulars, hair-brown; greater coverts white, edged with deep black; primaries brown; secondaries, forming a conspicuous speculum, glossy green, with a black tip, narrowly edged with white on the innermost feathers; tertiaries white externally, (forming a continuous line with the white coverts), hair-brown internally; lower back and rump black; tail deep brown; beneath, from the breast pale earthy or dingy white, with numerous brown spots, increasing in size on the abdomen and flanks; vent and under tail-coverts deep blackish-brown.

Bill blackish with a red spot at the base, and the tip yellow; irides brown; legs and feet orange-yellow. Length 24 to 25 inches; wing 12; tail 4; bill at front 2¼; tarsus 2; mid-toe 2⅛. Sexes alike.

This fine Duck is almost peculiar to India, including Ceylon, and is found throughout the whole country of which it is a permanent resident; it is also found in Burmah. It frequents by preference,

but not exclusively, well wooded districts, sequestered tanks, and marshy ground, and in the cold season spreads sparingly over the barest districts where tanks abound. It is usually met with in small parties, rarely more than from eight to twenty, and generally fewer. I have seen it most abundant in Western Mysore and in Eastern Bengal. It nidificates on the ground, among long grass, laying eight or ten greenish-white eggs. The voice is very like that of the wild Duck, but is not often repeated. Its flight is rather slow and heavy. It is one of the very best Ducks for the table, in my opinion rivalling the Mallard, Gadwall, and Red-crested Pochard.

Other allied species are *A. flavirostris*, A. Smith, and *A. guttata*, Licht., from Africa; and there are others from the Oceanic region. A closely allied species from North Africa was considered the same by Rüppell, but Blyth distinguished it, naming it *A. Rüppellii*.

The next species has been separated as *Rhodonessa* by Reichenbach.

960. **Anas caryophyllacea**, Latham.

Blyth, Cat. 1774—Jerdon, Cat. 368—Jerdon, Ill. Ind. Orn., pl. 34—Gray Illd. Genera of Birds, pl.—*Lal-sira*, H. of some.

The Pink-headed Duck.

Descr.—Male, with the head, cheeks, sides of neck, and hind neck, beautiful pale rosy-pink, with, in the breeding season, a small tuft of still brighter rosy on the top of the head; the rest of the plumage fine glossy dark chocolate-brown, paler and less glossed beneath; speculum and the inner webs of many of the quills pale reddish fawn or dull salmon colour; edge of the wing white; uppermost tertiaries rich glossy-green; lower wing-coverts and quills beneath pale dull pink colour, with a sating lustre.

Bill reddish-white, rosy at the base and faintly bluish at the tip; irides fine orange-red; legs and feet blackish, with a tinge of red. Length 24 inches; wing 11½; extent 39; tail 4¼; bill at front 2¼; tarsus 2¼; mid-toe 2⅜.

The female has the pink of the head somewhat more dull and pale, and the vertex has a brownish spot in some, which is continued faintly down the back of the neck. The young birds have the head and neck pale vinous-isabella colour, with the top of the head, nape, and hind neck, brown; the whole plumage lighter brown, in some mixed with whitish beneath.

This very lovely Duck is most common in parts of Bengal, but is found at times throughout Northern India, is rare in the N. W. Provinces, and still more so in Central and Southern India. I have procured it rarely as far south as Madras, and long ago heard of its occasional visits to the Deccan, but it is only since I have visited Bengal that I have seen it in its native haunts. It shows a decided preference for tanks and jheels well sheltered by overhanging bushes, or abounding in dense reeds, and in such places it may be found in the cold season in flocks of twenty or so occasionally, but generally in smaller parties of from four to eight. During the heat of the day, it generally remains near the middle of the tank or jheel, and is somewhat shy and wary. It breeds towards the end of the hot season, and its eggs are said to be laid among thick grass not far from the water. Its cry is very similar to that of the domestic Duck. The beautiful pale rosy tint of the under surface of the wings is very conspicuous during flight, and renders this species very readily distinguishable even at some distance. This Duck is said also to occur in Burmah. It is excellent eating. Many other species of *Anas* are recorded, but the only other Eastern ones are *A. luzonica*, Fraser, and *A. superciliosa*, Müll. and Schleg.

Gen. CHAULELASMUS, Gray.

Syn. *Chauliodus*, Swains.

Char.—Bill equal to the head, depressed throughout, of nearly uniform width, but slightly narrowing towards the tip, which has a small nail; the lamellæ long, projecting; wings lengthened; tail rather long; the central feathers slightly lengthened.

Gadwalls differ from the true Ducks in their slightly shorter bill, and more lengthened and delicate lamellæ. They are said by

Selby to be more aquatic than the wild Ducks, and to dive readily, but I have not observed this latter habit.

961. Chaulelasmus streperus, Linn.

Anas apud Linnæus—Blyth, Cat. 1777—Jerdon Cat. 381—Sykes, Cat. 216—Gould, Birds of Europe, pl. 366.

The Gadwall.

Descr.—Male, head and neck greyish white, speckled with brown; back dark clove-brown, with white crescentic lines; scapulars undulated with white and blackish brown; rump and upper tail-coverts black, glossed with purplish blue; tail cinereous brown, edged and tipped with white; lesser wing-coverts grey, mixed with white; median wing-coverts rich brownish chesnut; greater coverts glossy black; speculum white above, black beneath; quills brown; tertials brownish grey; lower part of the neck and breast dark brown with white crescentic lines; abdomen white, minutely speckled with greyish brown, and the flanks with brown and white undulations; lower tail-coverts glossy black.

Bill brownish black, tinged with reddish beneath; irides dark-brown; legs pale orange. Length about 20 inches; wing $10\frac{1}{2}$; tail $3\frac{1}{2}$; bill at front $1\frac{3}{4}$; tarsus $1\frac{1}{2}$.

The female has the head black mixed with whitish, a pale superciliary streak; the upper parts deep brown, the feathers edged with buff; the lesser wing-coverts hair-brown, margined paler; the speculum as in the male; the tail marbled with brown and whitish; the chin and throat white; breast pale buff, with brown spots, and the rest of the lower parts white; the bill paler, and its margins reddish.

The Gadwall is by no means a rare bird in any part of India, in the cold weather, generally frequenting the more open and larger tanks in moderately large parties. Its flight is rapid, and its voice not unlike that of the common Duck. It is found over the greater part of the Old Continent, and also in America. It is justly considered one of the best wild Ducks for the table. No other species of Gadwall is recorded.

Gen. DAFILA, Leach.

Char.—Tail long, of sixteen feathers, with the central feathers much lengthened and narrow; neck very long; bill slightly narrower than in the preceding forms, and elevated at the base, equal to the head, of uniform width; lamellæ not projecting; wings long, the 1st primary longest.

The Pintails are, by some, not separated from the Teals, but their larger size, long necks, and lengthened rectrices, sufficiently characterize them.

962. **Dafila acuta**, LINN.

Anas apud LINNÆUS—BLYTH. Cat. 1775—JERDON, Cat. 385—GOULD, Birds of Europe, pl. 365—*Dig-hons*, Beng.—*Kokarali*, Sindh.

THE PINTAIL DUCK.

Descr.—Male, forehead and crown umber-brown, the feathers with paler edges; the rest of the head, chin, and throat, dark hair-brown, slightly glossed behind the ears with purplish green; fore-part of the neck and two lateral streaks, passing upwards to the occiput, white; neck above deep blackish-brown; the whole of the back beautifully marked with transverse undulating lines of black and greyish-white; scapulars black; upper tail-coverts and tail dark cinereous brown, the edges of the feathers paler, and the two central elongated tail-feathers black; wing-coverts and primaries hair-brown; lesser wing-coverts smoke-grey; the speculum blackish-green, glossed with purple, bordered above by a pale ferruginous bar, and below by a white one; tertiaries long and acuminate, velvet-black, with a broadish edging of greyish or yellowish-white; breast and abdomen white, the sides of both with transverse black and whitish lines, and the latter minutely speckled with grey towards the vent; under tail-coverts black.

Bill black, the sides of the upper mandible bluish; irides dark brown; legs blackish grey. Length 25 to 28 inches; wing nearly 11; tail 8½; bill 2⅛; tarsus 1¾; middle toe 2¼.

The female is smaller, has the head and neck reddish brown, speckled and streaked with dusky; the upper plumage umber-

brown, the feathers edged with reddish white; wing-coverts brown, edged white; lower parts pale fulvous, obscurely spotted with brown; speculum dull without the green gloss; tail, with the two medial feathers, scarcely longer than the others.

The males of this species are said, by an actual change of colour in the feathers, to assume the female plumage for a short time after incubation, but to change it at the autumnal moult.

The Pintail is one of the most numerous winter visitants to India in the present sub-family, frequenting large tanks and jheels, often in immense flocks, and flying with great rapidity. Its long brown neck and lengthened tail causes it to be readily distinguished when in flight. Its call is soft and subdued, and it is by no means garrulous. Few Ducks are brought to the different markets for sale in such abundance as this species, and it is very excellent eating. Like most of the Ducks, it has a wide geographical distribution throughout both Continents, and breeds in northern regions, laying eight or ten bluish-white eggs.

Another species of Pintail is *D. bahamensis*, L., the type of *Pœcilonetta*, Eyton.

Gen. MARECA, Stephens.

Char.—Bill short, raised at the base, narrowing towards the tip; nail moderate; lamellæ distant, projecting in the middle of the bill; tail short, cuneate, of fourteen feathers; hind-toe small with a narrow web.

The Wigeons have the bill shorter than in the wild Duck and Teal, more raised at the base and narrow at the tip, and with the lamellæ short and distant, more like those of the *Anserinæ*. In accordance with this structure, they live chiefly on grasses, &c., which they are said to pluck like geese. In the form of the tail, and also in that of the tracheal labyrinth, they most resemble the Pintails.

963. **Mareca Penelope**, LINN.

Anas apud LINNÆUS—BLYTH, Cat. 1778—SYKES, Cat. 219—A. fistularis, BRISSON—JERDON, Cat. 380—GOULD, Birds of Europe, pl. 359—*Cheyun*, Nep.

The Wigeon.

Descr.—Male, forehead and crown creamy-yellow; rest of the head and upper part of the neck chesnut-red; the cheeks speckled with black; back minutely barred with transverse wavy lines of black and white; scapulars black, edged with white; tail blackish grey; wing-coverts pure white; the greater coverts with velvet black tips, some of the lesser ones, near the body, pale greyish; quills cinereous brown; speculum of three bars, the middle one glossy green, the upper and under ones black; chin and throat black; lower part of the neck and breast vinaceous red; abdomen white, the flanks with black and white wavy lines; under tail-coverts black, glossed green.

Bill plumbeous blue, black at the tip; irides red-brown; legs dusky leaden. Length 18½ inches; wing 10½; tail 4¾; bill at front 1⅜; tarsus barely 1½; mid-toe not quite 2.

The female has the head and neck fulvous brown, speckled with dusky; the back and scapulars dusky brown with reddish edges; wing-coverts brown, edged with whitish; the speculum without the dark-green gloss; the breast and belly much as in the male; the flanks rufous brown with ashy tips; bill and legs more dusky than in the male.

In some specimens, the forehead alone is yellowish, that tint not extending over the top of the head.

In summer the head and neck of the male become spotted with black; the back and scapulars are mottled and barred with brown and dusky; the breast and sides are reddish-brown, with darker bars and lines; the under tail-coverts white, with brown bars.

The Wigeon cannot be said to be either common or abundant in India, although it is met with occasionally in every part of the country, in small or moderate flocks. It has a peculiar shrill whistling call chiefly heard during flight. Its geographical distribution is over the northern and temperate regions of the Old Continent. It breeds far north, and, though very abundant in Britain, is only a winter visitant there.

The American Wigeon is very closely allied, and was formerly considered identical. *M. castanea*, Eyton, and *M. gibberifrons*,

Müller, are eastern Ducks considered to belong to this genus, and there are others from Africa and America.

Gen. QUERQUEDULA, Stephens.

Char.—Bill of moderate length and of uniform width, slightly raised at the base; the lamellæ not apparent; the nail small, and the tip obtuse; wing long and pointed; tail wedge-shaped, of 14 or 16 feathers.

The Teals, so called, are simply small Ducks, much of the same type as restricted *Anas*, but with the bill longer and narrower, assuming a semi-cylindric shape; the laminæ, too, are shorter and less prominent. They are of somewhat slender make, and fly very rapidly. Several species are known, all of small size.

964. Querquedula crecca, LINN.

Anas apud LINNÆUS—BLYTH, Cat. 1780—SYKES, Cat. 222—JERDON, Cat. 384—GOULD, Birds of Europe, pl. 362—*Tulsia bigri*, Beng.

THE COMMON TEAL.

Descr.—Male, crown of head, cheeks, front and sides of the neck, ferruginous brown; on the sides of the head, inclosing the eye, a large patch of deep glossy green, passing off backwards to the nape in the form of a broad band; back and scapulars beautifully marked with transverse undulating lines of black and white, some of the longer scapulars creamy-yellow, with a portion of their outer webs velvet black; tail hair brown, the feathers edged with white; wing-coverts brown, tinged with grey; the speculum, formed by the tips of the secondary coverts, deep green in the middle, velvet black at the sides, bordered above by a broad yellowish white bar; chin black; lower part of the neck in front, and breast, reddish or creamy-white, with round black spots; abdomen white; lower tail-coverts blackish-brown, bordered at the sides with yellowish-white.

Bill blackish; irides hazel-brown; legs greyish-brown. Length 14½ inches; wing 7½; tail barely 3; bill at front 1½; tarsus 1¼; mid-toe 1½.

The female has the head, neck, and all the upper parts, dusky-brown, the feathers more or less broadly edged with pale reddish-brown; the throat, cheeks, and a band behind the eyes, yellowish-white, spotted with black; the speculum as in the male, and the under parts yellowish-white.

The well known Teal is one of the most abundant as well as the earliest of the visitors to India. I have seen it early in September, and it is late before it leaves the country. It frequents both tanks and rivers, often in immense flocks, and its flight is amazingly rapid. Large numbers are netted or caught in various ways to supply the *Tealeries*. It is a strictly night-feeding species, and about sunset flocks may be seen and heard flying in different directions to their feeding grounds. Its geographical distribution is similar to that of most of the Ducks of this sub-family, and it breeds in northern and temperate regions.

The next species is placed under *Pterocyanea*, Bonap., differing in having the points of the lamellæ just visible, and the bill slightly broader in proportion making an approach to the Gadwalls.

965. **Querquedula circia**, Linnæus.

Anas apud Linnæus—Blyth, Cat. 1781—Sykes, Cat. 221,—Jerdon, Cat. 383—Gould, Birds of Europe, pl. 364—A. querquedula, Linn.

The Blue-winged Teal.

Descr.—Male, crown, occiput, and a line down the back of the neck, umber-brown; over each eye a band of pure white, prolonged down the sides of the neck; cheeks and upper part of the neck chesnut-brown, with fine longitudinal streaks of white; back brown, glossed with green, the feathers edged with ashy and yellowish-brown; scapulars long and acuminate, black, with a broad central white streak; wing-coverts bluish-ash; speculum greyish-green, bordered above and below by a white bar; tail dusky-grey, the feathers edged lighter; upper tail-coverts yellowish-white, spotted with black; chin black; lower part of the neck and breast pale fulvous, with crescent-shaped black bars;

abdomen white, the flanks with transverse wavy lines of black; vent and under tail-coverts yellowish-white, spotted with black.

Bill blackish-brown; irides hazel; legs dusky. Length 15½-16 inches; wing 8; tail nearly 3; bill at front 1⅝; tarsus 1⅛; mid-toe not quite 1¾.

The female has the head, neck, and upper parts, dusky-brown, the feathers, with whitish edges; the eye streak faint; wing-coverts dark ash-grey; speculum dull, the green tinge almost wanting; the chin and throat white; the lower part of the breast and belly white, spotted with brown on the flanks and lower abdomen.

The Blue-winged or Garganey Teal is, perhaps, still more abundant in India, than the common Teal, but is somewhat later in its arrival here. It occurs in vast flocks, feeding at night chiefly, and has a swift flight. Like the last, numbers are caught and fed throughout the summer in our *Tealeries*, and both this and the last are most excellent food. The Garganey Teal does not extend to America, but is distributed over the greater portion of the Old Continent.

I have once or twice procured birds with the whole head, neck, and under parts, deep ferruginous, but I consider this to be an individual variation.

Vast quantities of this and the previous species are annually caught alive, some by large flap-nets, others by nooses fixed to a long line across a jheel; and in some places, by a man wading with his head above water concealed in a large earthen chatty, several of which have previously been set afloat.

The next species has been separated by Bonaparte as *Eunetta*, but it only differs in its mode of coloration.

966. **Querquedula glocitans**, Pallas.

Anas apud Pallas—Blyth, Cat. 1779—A. picta, Steller—A. formosa, Georgi—A. baikal, Bonnaterre.

The Clucking Teal.

Descr.—Male, forehead, top of the head, and occiput, rich purple-brown, bounded by a narrow white line from the eye;

face, cheeks, and sides of neck fawn colour; a black streak from below the eye, meeting a black patch on the throat; nape and hind neck glossy-green, ending in a black stripe down the back of the neck, separated from the fawn colour of the side of the neck by a narrow white line; upper plumage finely marbled-grey, edged with rufous on the back; upper wing-coverts hair-brown; the median coverts the same, with an edging of rufous forming the anterior margin of the speculum, which is glossy-green, ending in velvet-black, and bordered posteriorly by silvery white; primaries brown; scapulars lengthened, deep black in the centre, white on their upper side, and rufous externally; upper tail-coverts brown, white on either side; tail of 16 feathers dark-brown; beneath the throat black; the neck and breast vinous-purple, with a few black spots, paling below; abdomen white, flanks mottled grey; under tail-coverts black.

Bill dusky; legs dusky. Length 15½ inches; wing 8½; tail 3; bill at front 1½; tarsus 1¼; middle toe 1¾; weight 1lb.

The female wants the rich markings on the head and face, which are mottled grey and brown; the scapulars are not lengthened; the upper plumage is dusky, with rufous edgings; the chin and throat white; the breast rufous, largely spotted with dark-brown, as are the flanks; and the tail-coverts white, with brown spots.

This beautiful Teal has been obtained on very few occasions, by Mr. Blyth, from the Calcutta Bazar, and there is no other record of its occurrence in India.

It is a rare bird in Europe, and appears to be most common in Northern Asia, on the borders of Lake Baikal, extending to Japan and China. Pallas gave it its specific name in consequence of its peculiarly loud clucking-call, *mok*, *mok-mok*, *lok*, which Middendorff calls a horrible noise. Pallas states that it breeds in Eastern Siberia, laying 10 eggs in a hollow in the ground, and that it migrates early.

A. falcata, Pallas, belongs to the same type as *glocitans*, but *A. bimaculata* is considered to be a hybrid between the Wigeon and Pintail. *Q. javana*, Bodd., figd. P. E. 930.; *Q. manillensis*, Gmel.; and *Q. numeralis*, Müll. and Schl., are Eastern Teal; and there are several other recorded species of *Querquedula*, some

from Africa, others American. Not far from the Teals should be placed the beautiful Summer Duck of North America, *Aix sponsa*, L., and the still more gorgeous Mandarin Duck, *A. galericulata*, L. This type, by its somewhat narrow and tapering bill, appears to grade towards the *Mergidæ*. A few other forms of this sub-family are given by Bonaparte, but without any very special characteristics.

Sub-fam. FULIGULINÆ, Diving Ducks.

Hind toe short, bordered by a more or less wide web; wings shorter than in the last sub-family; tarsus short, more compressed, set further backwards; feet large, the web reaching to the very end of the toes, and wide; tail generally short, rounded, or somewhat wedged.

The Ducks of this sub-family have a larger head and shorter neck than the true Ducks; they walk badly in consequence of the very backward position of their legs, but swim well and dive freely. There is less difference, in general, between the sexes than in the last sub-family, and there is only one moult. Many are exclusively marine Ducks, others partially so; a few are mostly fresh water, and to this last section belong all the Indian species. These vary somewhat in the form of the bill and in some other points, and though closely related, and all formerly placed under *Fuligula*, are now divided according to Gray (whose List of Genera I chiefly follow) into three genera. They comprise the *Fuliguleæ* of Bonaparte. The Pochards generally have a stout heavy body, and firm, close, and thick plumage, colored in masses, mostly uniform and plain, and the speculum is less strongly marked or wanting. In all, the trachea is terminated by a labyrinth, partly osseous, partly membranous.

Gen. BRANTA, Boie.

Syn. *Callichen*, Brehm and Gray; *Mergoides* EYTON.

Char.—Bill long, barely raised at the base, moderately wide; tip depressed, slightly narrowed, ending in a rather large nail; lamellæ distant, large and prominent; wings moderate, 1st quill longest; tail short, rounded, of 14 feathers.

This genus comprises but one species.

967. Branta rufina, Pallas.

Anas apud Pallas—Blyth, Cat. 1784—Gould, Birds of Europe, pl. 369—Sykes, Cat. 223 and 224?

The Red-crested Pochard.

Descr.—Male, head, cheeks, throat, and upper part of the neck reddish-bay; the feathers on the crown elongated and of a silky texture, forming a crest somewhat paler than the rest of the head; back, wings, and tail yellowish-brown; the bend of the wing, a large spot on the sides of the back, the speculum, and the base of the primary quills white; lower part of the neck, breast, and abdomen deep black; the flanks white.

Bill bright vermilion red, the tip white; irides red; legs orange-red. Length 22 inches; wing $10\frac{1}{2}$; tail 3; bill at front $2\frac{1}{3}$; tarsus $1\frac{1}{2}$; mid-toe $2\frac{1}{2}$.

The female has the upper parts pale yellowish-brown, darker on the head and neck, and the crest less developed; speculum half greyish-white, half pale brown; base of the quills white, tinged with brown; breast and flanks yellowish-brown; belly grey; bill and feet reddish-brown.

This fine Duck is found throughout the greater part of India, is more rare in the South, and chiefly frequents the larger tanks and jheels. It generally keeps to the middle of the tanks, and is a wary bird, not usually allowing a near approach. Its flesh is juicy, tender, and high flavored, and it is, by some, considered the finest Duck for the table. A writer in the *India Sporting Review* remarks, that during the day, they are constantly on the move, 'now pursuing one another, now screaming, all up at once, then down again.'

It is chiefly a native of Northern Asia, North-Eastern Europe, and Northern Africa, (where it is said to breed in marshes, laying seven or eight brilliant green eggs,) wandering South in winter, and very rarely extending its migrations as far West as Britain. No other species of this genus is recorded.

Gen. Aythya, Boie.

Syn. *Nyroca*, Fleming.

Char.—Bill long, raised at the base, broad, depressed, and obtuse at the tip, of nearly uniform width throughout; lamellæ not pro-

minent; tail short and rounded, the feathers narrow and somewhat rigid.

This genus comprises two forms, one of which has been separated as a sub-genus.

The birds of the first group are large Ducks, with the back usually finely undulated, and some have hence been called Canvas-backs.

968. **Aythya ferina**, Linnæus.

Anas apud Linnæus—Blyth, Cat. 1785—Jerdon, Cat. 389—Gould, Birds of Europe, pl. 368.

The Red-headed Pochard.

Descr.—Male, head and neck bright chesnut-red; upper part of the back black; middle and lower back, wing-coverts, and scapulars white, with numerous fine undulating black lines; rump and upper tail-coverts black; tail dark ashy-brown; primaries deep dusky-brown; secondaries bluish-grey; breast black; abdomen whitish, faintly undulated like the back, the lines becoming darker towards the vent; under tail-coverts black.

Bill bluish-grey, the tip and base black; irides orange-yellow; legs bluish-grey. Length 19 inches; wing 9; extent 30; tail 2½; bill at front 2; tarsus 1½.

The female has the crown, nape, and sides of the neck, and the upper part of the back, reddish-brown; the back as in the male, but the lines less distinct; throat and forepart of the neck white, mixed with reddish; breast reddish-brown, mottled with white; the middle of the abdomen greyish-white.

This Pochard appears to be more abundant in Western India than in Bengal, but occurs throughout the whole country in small parties, generally on the larger and more open tanks.

It inhabits Northern Europe and Asia, and breeds among reeds and plants, laying twelve or thirteen greenish-white eggs.

The American representative is now considered distinct, *A. Americana*, Bonap.; and there is, besides, in North America, the *A. valisneria*, or Canvas-back, said to be the best of all the Ducks of the New Continent.

The next species (with some closely allied ones) has been separated as *Nyroca*, and this is admitted as a sub-genus by Gray. The birds are of smaller size, and have a somewhat different colouration.

969. Aythya nyroca, Guldenstadt.

Anas apud Guldenstadt—Blyth, Cat. 1789—Jerdon, Cat. 391—A. leucophthalmos, Bechstein—A. glaucion, Pallas—Gould, Birds of Europe, pl. 368—*Lal-bigri*, Beng.

The White-eyed Duck.

Descr.—Male, head and neck deep ferruginous, with a narrow collar of blackish-brown on the lower part of the neck; back, scapulars, and wing-coverts dusky-brown, somewhat glossed with green and purple, and the whole finely powdered with pale reddish-brown; upper tail-coverts and tail dusky-brown, with a dash of ferruginous; primaries dusky; speculum white, edged with black in the lower part; chin whitish; lower part of the neck and breast bright ferruginous; abdomen and under tail-coverts pure white; the lower portion and vent blackish-grey.

Bill bluish; irides white; legs grey. Length 16 inches; wing 7¾; tail 2; bill at front 1⅝; tarsus 1¼; middle toe nearly 2.

The female differs from the male in the head and neck being brown, the feathers edged with ferruginous; the upper parts are glossy umber-brown, the feathers edged with pale brown; the irides are less pure white, and the bill and feet are dusky-grey; otherwise as in the male.

In the young, there is still less ferruginous, and the irides are pale brownish.

This little Duck is exceedingly common in Northern and Central India, less so in the South. It frequents both tanks and rivers, and prefers grassy tanks and wooded jheels and rivers. It appears to feed a good deal during the day, and is met with in large parties scattered among the grass or weeds, the birds often rising singly.

This Pochard inhabits the same countries as the other species, and is occasionally killed in Britain. It is stated to breed in Northern Africa. One or two allied species are recorded from Australia, and another from the Marianne islands.

Gen. FULIGULA, Stephens.

Syn. *Platypus*, Brehm—*Fulix*, SUNDEVALL.

Char.—Bill moderately long, not raised at the base, broad throughout, depressed, the sides dilated, and the tip somewhat broader than the base; lamellæ distant, not prominent; nostrils advanced; wings moderate; tail short, rounded.

These Ducks have the widest bills in this sub-family. The first species has been separated as *Marila*, Reich. It has the bill proportionally longer than in restricted *Fuligula*, and not quite so broad.

970. Fuligula marila, LINNÆUS.

Anas apud LINNÆUS—BLYTH, Cat. 1787—GOULD, Birds of Europe, pl. 371.

THE SCAUP POCHARD.

Descr.—Male, head and neck black, glossed with green; top of the back and scapulars whitish, with zig-zag black lines; lower back and upper tail-coverts black; tail brown; wing-coverts black, marbled with ashy; speculum white; quills brown; lower neck and breast deep black; abdomen and sides pure white, with brown zig-zag markings on the lower portion; under tail-coverts black.

Bill clear bluish above, dusky below, the tip black; irides brilliant yellow; legs bluish-ashy, the webs blackish.

The female has the head and neck blackish-brown, with a large white space round the eye; back, scapulars, and wings with brown and white zig-zag markings; lower back and upper tail-coverts smoky-black; lower neck and breast deep brown; abdomen white, marked with brown posteriorly.

Bill deep grey. Length 19 to 20 inches; wing 9; extent 29; tail 2½; bill at front nearly 2; tarsus 1½; mid-toe 2½.

The Scaup Duck has hitherto only been recorded from Nepal, and must be a very rare visitant. It inhabits the Northern regions of Europe, Asia, and America, and prefers sea-coasts and the mouths of tidal rivers to fresh water lakes; it feeds chiefly on molluscs.

The American representative of this species is separated by Bonaparte as *F. mariloides;* another species from New Zealand is recorded by Bonaparte.

971. Fuligula cristata, Ray.

Blyth, Cat. 1788—Sykes, Cat. 225—Jerdon, Cat. 390—A. fuligula, Linnæus—Gould, Birds of Europe, pl. 370—*Dubaru*, H.—*Nella chilluwa*, Tel.—*Golden-eye* of Indian Sportsmen.

The Tufted Duck.

Descr.—Head and neck, including the long, pendent, silky crest, glossy black with green and purple reflections; back, wings, and rump black, slightly glossed and powdered with greyish-white; breast glossy black; rest of the lower parts pure white; the vent black; speculum, formed by the secondaries, white, with a narrow greenish-black edge; tertials glossy green.

Bill dark bluish-grey, the tip black; irides golden-yellow; legs leaden, the webs dusky. Length 17 inches; wing $8\frac{1}{4}$; extent 28; tail rather more than 2; bill at front $1\frac{7}{12}$; tarsus $1\frac{3}{6}$; mid-toe $2\frac{3}{4}$.

The female has the colours somewhat duller and more brown; the crest not so long; the speculum smaller, and the lower parts spotted with brown. The young want the crest, and have the base of the bill and region of the eyes varied with white.

The Tufted Duck is very common in Central and Southern India, less so in Bengal. It frequents open tanks, keeping well away from the edges, and is generally found in small or moderately sized parties. It is very late in leaving India, and I once killed one in June, near Hyderabad in the Deccan. It is found throughout Europe and Asia, breeding in the North. It feeds on water-insects and molluscs. The American representative is *A. collaris*, Don, (*rufitorques*, Bonap.)

Other Ducks of this sub-family are the Sea-ducks, the Eiders, Scoters, Steamer-ducks, &c.

The Sea-Ducks are classed by Bonaparte under the section *Clangulecæ*, and the Eiders and Scoters under *Somateriecæ*; they might perhaps form one sub-family, all having a somewhat similar style of colouring, and being mostly denizens of Northern Seas. Among the *Clangulecæ* deserving of notice are the beautiful *Harelda glacialis*, or long-tailed Sea-duck: this species moults twice a year, and appears to be very distinct from the other types;

the bill is short and narrow anteriorly. The Harlequin Duck, *A. histrionica*, variegated in a fantastic way with black and white, forms the genus *Histrionicus*, Lesson. The garrots or golden-eyes form the genus *Clangula*. They differ in habit from the other Sea-ducks, preferring fresh water, and they breed in the hollows of trees. Their heads appear very full and puffy, and they seem to grade into the *Fuliguleæ*.

The Eider Duck, *Somateria mollissima* (L.,) is the type of the next group: its down, and that of the King-duck, *S. spectabilis*, are highly esteemed. *Anas Stelleri*, Pallas, forms the type of *Stelleria*, Bonap. The Scoters are large dark coloured Ducks that dive remarkably well, and live on shell-fish. The best known species are *Oidemia nigra*, the Black Scoter, and *O. fusca*, the velvet Scoter, both from Northern Seas.

The *Micropterea* contain *Micropterus cinereus*, the Steamer or Racer-duck of Southern Seas. It flies badly, having short wings, but swims and dives with rapidity. *Camptolæmus labradorus* is another Duck of the same group.

The *Erismaturinæ* are classed as a family by Bonaparte. Their chief characteristics are the stiff and pointed tail-feathers. Among the most remarkable forms are *Biziura lobata* of Australia, with a large fleshy appendage hanging under the bill; *Erismatura leucocephala*, from lakes in Northern Asia and Africa, rarely killed in Eastern Europe; and there are species of this genus from Africa, America, and Australia. *Nesonetta Aucklandiæ*, Gray, is another type, as is *Thalassornis* of Eyton.

Fam. MERGIDÆ.

Bill straight, narrow, cylindrical, the tip well bent over; the edges of the mandibles armed with strong teeth pointing backwards; nostrils median, longitudinal; tarsus short, set far backwards; feet large, hind toe lobed; wings moderate; tail wedge-shaped, of 16 or 18 feathers. Form lengthened and flattened. Head more or less crested.

The Mergansers form a well-marked group in this tribe. Their narrow and toothed bill is very unlike that of the Ducks, although the teeth are only a modification of the lamellæ. Their flight is strong and swift, but their gait on land is awkward. They moult

in autumn only, and the colours of the males undergo an extraordinary amount of change towards mid-summer from an alteration in the colour of the feathers themselves. They do not acquire their full plumage till the second autumnal moult. They are excellent divers, using their wings as well as their feet; and they live chiefly on fish. The tongue is long, pointed and ciliated; the gizzard is less muscular, and their intestines shorter than those of the ducks. They possess two cæca of moderate length. The labyrinth or the lower part of the trachea of the males is enormous, and partly membranous. Only five or six species are known. Of these, two visit India in winter; one found in rivers in the Himalayas; the other spread sparingly through Northern India.

Gen. MERGUS, Linn.

Char.—Those of the family.

The following species is separated by Bonaparte as *Merganser* :—

972. **Mergus castor,** LINNÆUS.

BLYTH, Cat. 1798—M. merganser, LINN.—M. orientalis, GOULD—GOULD, Birds of Europe, pl. 384.

THE MERGANSER.

Descr.—Male, head (with a short thick crest,) and upper part of the neck, glossy blackish-green; lower part of the neck white; upper back and scapulars next the body, deep black; the rest of the back and upper tail-coverts ashy, the tips of the feathers whitish here and there; tail ashy-grey; breast, abdomen, and under tail-coverts white, tinged with orange-buff; wing-coverts and outermost scapulars rich buff-orange, and the latter edged with black.

Bill deep blood-red, black on the culmen, paler at the edges; irides red; feet orange-red. Length 26 inches; wing 11; bill at front 2¼; tarsus 2.

The female (and young males till the second moult,) have the head and neck reddish-brown; the throat white; the upper plumage ashy; beneath yellowish-white, the sides of the breast and the flanks pale ashy; a white speculum; primaries black; tail ashy-brown.

Bill and feet dull red. Length 23 inches; extent 35; wing 10½; bill at front 1⅞.

The Merganser is chiefly found, in India, on rivers within the Himalayas, in small parties. I have frequently seen it on the great Rungeet in Sikkim, and also in rivers in Kumaon, and on the Ganges at Hurdwar. One instance only is recorded of its occurrence in Central India, it having been procured by Tickell at Chybassa. Captain Smyth recently gave me two very large concretions found in one of these birds, but I have not yet had them examined. It is said to breed on holes of trees.

The next species, from its small size, and shorter bill, as well distinct mode of colouration, is separated as *Mergellus*.

Gen. MERGELLUS.

Char.—Bill shorter, and somewhat wider than in *Mergus*, the tip much less hooked; teeth numerous and prominent in the lower mandible. Of small size. Pied, black and white, tail of 16 feathers.

973. **Mergellus albellus,** LINNÆUS.

Mergus apud LINNÆUS—GOULD, Birds of Europe, pl. 387.

THE SMEW.

Descr.—Male, a large patch on each side of the base of the bill enclosing the eyes, and another longitudinal one on the occiput, black glossed with green; the rest of the head, occipital crest, and neck white; back, some of the lesser wing-coverts, and the primaries black; scapulars white, edged with black on the outer webs; secondaries and greater wing-coverts black, tipped with white; some of the lesser wing-coverts white; upper tail-coverts and tail bluish-grey; all the lower parts white, with two crescentic bands of black advancing from the shoulders, one nearly encircling the lower part of the breast, the other the upper part of the breast; flanks and thigh-coverts with wavy black lines.

Bill bluish-grey; irides brown; legs plumbeous. Length 16 to 17 inches; wing 7¾; tail 3; bill at front 1¼; tarsus 1¼.

The female has the crown, cheeks, and occiput reddish-brown, the crest shorter than in the male; back, upper tail-coverts, and tail deep ashy-grey; wings as in the male, but the dark parts grey

instead of black; the throat, sides and front of the upper neck, and the abdomen white; and the lower neck, breast and flanks, clouded with ash colour. Bill and legs dark grey. Much smaller than the male, and Pallas states that she has only 14 rectrices.

The Smew is found occasionally in various parts of Northern India during the cold weather. It has been killed near Cuttack; in Oude; is said not to be rare near Delhi; and has also been met with in Sindh.

It inhabits the north of both Continents, breeding in high latitudes in crevices and holes of trees, and laying 8 eggs. The young have pale or whitish down, and Mr. Wolley, who remarks this fact, states that no duck that has white down lays its eggs in an exposed situation; the converse, however, does not hold good, for the little Cotton-teal, that always breeds in holes, has black down. It is said to be an excellent diver, and to feed on fish, crustacea, and water insects, is very shy and vigilant, and flies rapidly. During flight it continually utters its peculiar bell-like call, hence it is called the Bell-duck in Northern Asia. Its flesh is exceedingly fishy, and, says Pallas, is rarely eaten even by the Russians. The same naturalist states that it returns very early from its winter migrations, the females arriving first, they are hence called Widows by some.

A very handsome species, *Mergus cucullatus*, from America, a rare visitant to England, is separated by Reichenbach as *Lophodytes;* and the red-breasted Merganser of Europe, is retained under restricted *Mergus*. One or two additional species of this family are recorded, one of which, *Merganetta armata*, differs in its somewhat rounded wing, armed with a spur.

Tribe. MERGITORES, Blyth.

Syn. *Colymbides*, Van Hoeven.

Wings fitted for flying, primaries short; tarsus compressed; hallux always present.

This tribe comprises the two distinct families of the Divers or Loons, COLYMBIDÆ, and the Grebes, PODICIPIDÆ; the former with the anterior toes completely webbed; and the latter with the toes free, bordered by a large loose web. The hind toe is lobed and partly connected with the outer membrane of the

inner toe, the nails are flat and broad. The form of the body is broad and depressed, and their plumage exceedingly thick, close, and glossy. The bill is long, straight, compressed, and pointed.

Fam. Colymbidæ, Loons or Divers.

The large Imbers or Divers have the feet completely webbed, and, unlike the Grebes, all of them frequent seas in preference to fresh water. They have moderate pointed wings, and fly well, but from the position of the feet, and the tibia being, as it were, imbedded in the integuments, they are unable to walk; though they push themselves forward, trailing on their belly. They have a short tail, and by means of this and the feet, they are enabled to stand upright. They are said to utter dismal howlings.

The sternum is broad with one notch, and the furcula is anchylosed to it. There is a long pointed process at the upper part of the tibia in front, which affords an extensive surface of attachment to the extensor muscles used in diving. They form their nest among herbage on the sea beach, and usually lay only two eggs, green with purplish or brown spots. They swim and dive with amazing rapidity. They are almost peculiar to the Northern hemisphere. One has been observed in Northern China by Mr. Swinhoe.

The great Northern Diver, *Colymbus glacialis*, an occasional winter visitor to England, is one of the best known; and there are only three or four species recorded.

Fam. Podicipidæ, Grebes.

Feet lobed; tail almost wanting.

The Grebes are a small family of fin-footed birds, frequenting ponds, lakes, and rivers occasionally, diving with rapidity, and feeding on various insects, crustacea, young fish, &c. From the structure of their feet, they were formerly classed with the Coots, but they differ in every other point, their tibia being enclosed within the integuments, whence they are unable to walk, but swim remarkably well, using their wings under water as well as their feet. They form large nests of rushes and sedges on the borders of lakes, and lay several eggs. Their plumage is dense and soft, the under parts beautifully silky; and the head is often adorned

with tufts; the young are striped black and white. The Grebes have 19 cervical vertebræ, whilst the Loons have only 13. The sternum is said to be very short, wide posteriorly, with one deep oval notch, but Owen states that some Grebes have two lateral fissures to the Sternum, and a few even a third, smaller and intermediate to the other two. They have a projecting process to the tibia like the last. They are found frequently to have swallowed feathers, but with what object is not known. They possess a single small cæcum. Pallas states that they want the uropygial gland, but that an oily matter, (their skin being very fat,) transudes through their skins, rendering the feathers very oily. The eggs are said to have the shell covered with a soft absorbent chalky substance. There is only one genus, which has however been lately sub-divided.

Gen. PODICEPS, Latham.

Char.—Bill straight, compressed, moderately stout; nostrils oblong, lateral; wings short, concave; tarsus moderate, compressed, with large scutellæ, serrated posteriorly; hallux bordered by a web; claws flat, depressed.

Of universal distribution.

974. **Podiceps cristatus,** LINNÆUS.

Colymbus apud LINNÆUS—BLYTH, Cat. 1812—GOULD, Birds of Europe, pl. 388.

THE CRESTED GREBE.

Descr.—Head (with a double occipital crest) shining black, which colour descends along the back of the neck; lower neck above ashy-brown; back and wings, including scapulars and middle-coverts, brown with a blackish-green lustre; lesser wing-coverts and secondaries white; cheeks and throat fulvous-white, succeeded by a wide frieze or collar, chesnut above, shining black below; lower neck, breast, and abdomen silky-white, tinged with rufous and ashy on the sides of the breast and abdomen.

Bill brown above, reddish on the sides and below, tip white; irides crimson-red; naked lores red; feet plumbeous externally,

within greenish-yellow. Length 22 inches; wing $7\frac{1}{2}$; bill at front $2\frac{3}{8}$; tarsus 2; middle toe $2\frac{3}{4}$.

The young bird has the head brown, the crest undeveloped; face and ears white, bordered with a rusty collar, and a much smaller bill.

The Crested Grebe has been occasionally killed in the Sunderbunds, and brought to Calcutta. It is among Hodgson's Birds of Nepal in Gray's list, but no specimen appears to have been sent. It also occurs in Sindh, and the Punjab. It is an inhabitant of the greater part of temperate Europe, breeding in Britain, and is also found in many parts of Asia and America. It is said to be three years before attaining its full plumage; and the young bird was long thought to be a distinct species. The eggs are three or four in number, of a greenish-white, and the nest a floating mass of weeds.

Other species are adorned with various tufts of feathers, viz., *P. cornutus*, and *P. auritus*, both from Northern Europe; and there are many others in all parts of the world.

The smaller species are separated by Bonaparte under the name of *Tachybaptes* of Reichenbach.

975. **Podiceps Philippensis**, Gmelin.

Blyth, Cat. 1816—Jerdon, Cat. 392 and 393—Sykes, Cat. 226—Pl. Enl. 905—945—P. minor, Gmelin—Gould, Birds of Europe, pl. 392? *Churaka*, H. of Falconers—*Dubari*, Beng.—*Pandub*, H. also *Pan-tirri*, and *Dub-dubi* in various parts of India—*Munu-gudi-kodi*, Tel.

The Little Grebe.

Descr.—Head above and the back of the neck dark sepia-brown, or black tinged with green; upper plumage generally glossy brown-black tinged with green; the sides of the rump fulvous; quills more or less white at the base, the first six quills almost all pale brown; secondaries with only a little brown on the outer webs; chin and base of the lower mandible glossy black; cheeks, ear-coverts, and sides of the neck bright chesnut; breast brown mixed with whitish or glossy blackish-grey; belly silky-white, the flanks brown.

Bill blackish, pale at the base; irides red-brown; legs greenish-black on the outside, livid tinged with fleshy within. Length 8 to 9 inches; wing 4; bill at front $\frac{3}{4}$; tarsus $1\frac{1}{4}$; middle toe $1\frac{3}{4}$.

Young birds want the chesnut-red on the neck, which is mostly white, the brown above is paler, and the chin and throat are pure white.

The common Grebe of India is generally considered to be identical with the Dabchick of Britain, but Bonaparte and some other Ornithologists separate several allied races, among others the Indian one. Sundevall particularly noticed its difference from the European bird. It appears always to have a greater extent of white on the wing than specimens from England.

The Indian Dabchick is exceedingly abundant in all parts of India, and, in spite of its short wings, appears to wander about a great deal. There is a considerable colony of these birds on the lake at Ootacamund, which is an artificial piece of water; they must consequently have been attracted to the spot when flying at a considerable height. This bird is found in all lakes, tanks, rivers, and even small ponds, in small parties, occasionally congregating into larger flocks. It feeds on small fish, crustacea, larvæ of water insects, &c., diving with ease and rapidity, and remaining long under water. It forms a large nest of grass and weeds, sometimes floating, at other times attached to growing reeds, and occasionally at the edge of the water, and lays from five to eight greenish-white eggs. Burgess noted that there was a good deal of artificial heat in the nests, from the quantity of partly decomposing grass, &c. Often these nests are crowded together, several almost touching each other.

Some Grebes from the Oceanic region are separated by Bonaparte as *Rollandia*, and others from the Australian region as *Poliocephalus;* whilst certain American species are classed under *Silbeocyclus*.

Tribe. VAGATORES, Blyth.

Syn. *Longipennes*, Cuv. *Laridæ* of some.

Wings long; tail short and rounded, or long and cuneate, or forked; hallux free, or wanting; bill hooked at the tip, or simply pointed, smooth edged.

The wings of all are long and pointed, and they are much on the wing, from which they usually take their food, either from the surface of the water, or by plunging for it. They feed on fish, crustacea, molluscs, dead animal matter, and a few on worms and insects. Their plumage is very bulky and dense, and when floating, their bodies are high out of the water; they for the most part swim badly, and very few dive.

They are divided into two great families,—1st, *Procellaridæ*, comprising the Albatrosses and Petrels,—2nd *Laridæ*, the Gulls and Terns.

Fam. PROCELLARIDÆ, Petrels, &c.

Bill much hooked at the tip, the apical portion of both mandibles distinctly separated from the basal portion, and appearing as if a piece had been joined on to the rest; the nostrils are united to form a tube on the base of the bill; the feet are fully webbed in front, but have only a claw behind, in place of a hind toe, joined by ligament to the tarsus.

The Petrels and Albatrosses somewhat resemble Gulls in appearance, but they are strictly Oceanic, are found at vast distances from land, and appear to pass the greater part of their lives in skimming over the waves. Their wings are very long and ample. They nestle on rocks, producing only one egg, and they live chiefly on oily substances floating on the waves, the fat of dead whales, &c., thus appearing to be the scavengers of the sea.

The sternum is wide and convex, and has only one fissure, and the keel is high and prolonged. The stomach is thin and capacious, and the cæca short. They vary in size from the little stormy Petrel to the giant Albatross. Two or three species of Petrel have been observed in the Bay of Bengal and Indian Ocean.

They are divided into the following families:—

1*st.*—*Diomedinæ*, Albatrosses.

2*nd.*—*Procellarinæ*, Petrels.

3*rd.*—*Halodrominæ*, Diving Petrels.

Sub. fam. DIOMEDINÆ.

Albatrosses have not been observed so far north as the Bay of Bengal. They are the giants of the family, and indeed are among

the largest of all living birds. They appear never to rest except when feeding, and often accompany ships for some days.

Sub-fam. PROCELLARINÆ.

Hind toe generally present.

Petrels are divided by Bonaparte into several sections.

A. Fulmareæ.—With long wings, short tail, and small feet. The Flying Petrels.

In these birds the bill is rather short and thick, well hooked at the tip; the lower mandible truncated. The group contains some very large species, *P. gigantea* and *P. glacialis*, and the well-known Cape-pigeon, *Daption capensis*. Like the Albatrosses, these birds are much on the wing; and the upper mandible has a few short lamellæ on its inner margin.

B. Æstrelateæ.—With moderate wings and large feet. The Swimming Petrels.

In these the upper mandible has no lamellæ. This section comprises a good many Petrels of moderate size, chiefly from the Antarctic Seas. In some the tail is lengthened and graduated. One genus, *Pterodroma*, Bonap., has the bill short, well curved, and much compressed, with the tail cuneate or rounded.

C. Prioneæ, Blue Petrels.

These are a group of neatly plumaged small Petrels well known to all who have sailed round the Cape or to Australia. They have a weak bill, and lamellæ in the upper mandible. The colour is blue-grey and white, and they are most abundant in Southern Seas.

D. Procellarieæ, Stormy Petrels.

The Stormy Petrels are well-known birds of small size, with a slender compressed bill and lengthened tarsus. The nostrils are contained in one tube or sheath, which is divided by a septum, showing two distinct crifices. They are found in all seas.

E. Puffineæ, Puffin Petrels, or Shearwaters.

Bill lengthened, slender, straight; both mandibles arched and hooked at the tip; nostrils tubular with two openings; wings long and pointed; tail rounded; tarsus moderate; a claw in place of the hind toe.

These are Petrels of lengthened form, with long slender bills, and the tarsus compressed and set far backwards. They are stated to be somewhat nocturnal in their habits, to run along the surface of the waves, feeding on putrescent fish and other floating animal matter. Their flight is rapid, and, like the Stormy Petrels, they are most busy in stormy weather.

No representatives of the Flying Petrels, Blue Petrels, or Shearwaters appear to have been hitherto observed in the Bay of Bengal or Indian Ocean.

Two species of Petrel have been observed by myself, of only one of which I obtained a specimen, from the neighbourhood of Madras, where I had, on several occasions, observed it not far from the shore, during rather rough weather; I lost this, however, before an accurate description was taken, and I can only say that I suspect it belongs to the division *Æstrelateæ*, of Bonaparte, and probably to the genus *Pterodroma*, Bonap.: indeed, it appeared to be very similar to *P. macroptera* of Dr. A. Smith, figd. in Zool., South Africa, Birds, pl. 50. It was entirely of a dull sooty-brown colour, palest beneath; length nearly 18 inches; wing 12½; tail 5; bill at gape nearly 1¾.

Procellarieæ.

Gen. THALASSIDROMA, Vigors.

Of small size; bill short, curved at the tip in both mandibles, much compressed; tarsus long, reticulated, a short claw in place of the hallux; nostrils in double tubes; wings long, the second quill longest; tail even or slightly forked.

The Stormy Petrels are well known to all who have crossed the seas, being birds of small size, that are most frequently seen in stormy weather near ships, perhaps in consequence of their being unable, during a storm, to get their usual food from the disturbed state of the ocean surface. They are said to be crepuscular or nocturnal birds, concealing themselves during the day in holes of rocks, &c., and feeding chiefly on oily substances floating on the surface of the sea. They are of a dark, almost black hue, relieved with white in most, have a very swift flight, and resemble

Swifts* both in general appearance, colours, and flight. They breed in holes in rocks, laying one large white egg.

976. Thalassidroma———?

A Stormy Petrel is not of unfrequent occurrence near the mouths of the Ganges in stormy weather, as well as throughout the Bay of Bengal, but I have not been able to procure a specimen,† though I have repeatedly seen them.

Sub-fam. HALODROMINÆ.

Gen. PELICANOIDES, Lacepede.

Syn. *Halodroma*, Illiger.

Char.—Bill very short, depressed at the base, hooked, under mandible truncated; nostrils superior, contiguous; wings short, 1st quill longest; tail short, rounded; feet short, no hind toe; chin with a dilatable pouch; tarsus reticulated.

These are Petrels with a dilatable throat, and wanting the hind claw.

977. Pelicanoides urinatrix, LATHAM.

Procellaria apud LATHAM—BLYTH, Cat. 1729—GOULD, B. Austr., VII., pl. 60—P. tridactyla, FORSTER—Puffinaria Garnottii LESSON?

THE LITTLE DIVING PETREL.

Descr.—Above blackish-brown; chin black, rest of the lower plumage white.

Bill black; irides dusky-blue; legs bluish-green, the feet black. Length about 8½ inches; bill nearly 1.

This curious little Diving Petrel is stated by Sundevall to have occurred in the Bay of Bengal. It chiefly frequents Southern Seas, round Australia, New Zealand, and even South America.

* The resemblance of these birds to Swifts (and through them to Caprimulgidæ) is deserving of attention.

† I hope that some observer who has the opportunity of procuring this or the last bird, will not fail to do so, that both may be thoroughly examined and identified.

Fam. LARIDÆ, Gulls and Terns.

Bill moderate or long, straight; wings long; nostrils linear, basal, pervious; hind toe almost always present, though small. Plumage usually pale grey and white, varied in some by black and brown.

This family comprises the Skuas or Parasitic Gulls, the true Gulls, and the Terns; many being familiar birds known to all, and some of them very abundant on our sea coasts, lakes, and rivers. They live chiefly on fish and crustacea, a few on insects, and others on carrion and refuse, and they either pick their prey off the surface of the water or plunge for it. They nidificate on the ground, laying two to four eggs, usually richly blotched with dark brown on a whitish or greenish ground.

They are divided into the following sub-families:—

1*st.*—*Lestridinæ*, Skuas on Parasitic Gulls.

2*nd.*—*Larinæ*, Gulls.

3*rd.*—*Sterninæ*, Terns.

Sub-fam. LESTRIDINÆ.

Bill moderate, thick, rounded above, the base covered with a cere, the tip strongly hooked; nostrils median, narrow; wings long, 1st quill longest; tail rather long, the two central feathers elongated; hind toe very small, claws, especially the inner one, hooked and sharp.

The Skuas or Parasitic Gulls are a small group of sea birds, which chiefly live by robbing their neighbours of the food they have taken. They differ from the Gulls by their shorter, thicker, and more hooked bills, the lengthened and cuneate tail, and strong sharp claws. In these respects, as well as in their possessing a cere, they show some points of affinity with Birds of Prey, which they also partially resemble in their habits. Their flight is peculiarly rapid. The plumage of the sexes is alike; and most of them do not attain their full plumage for several years. One species, *Lestris pomarinus*, has been once obtained on the Burmese coast, where it was procured by Major Tickell, having been captured by a native in a swampy meadow during heavy weather, probably in

an exhausted state. As it is a bird frequenting high latitudes, its occurrence in tropical regions must have been quite exceptional.

Sub-fam. LARINÆ.

Bill stout, curved at the tip, moderately long; nostrils median, long, narrow; wings long; tail full, even, or rounded, slightly forked in a few; tarsus moderately long, scutellated; the hind toe very short; tibia naked below; legs placed near the middle of the body; claws slightly hooked.

Gulls are a well-known family of sea-birds of universal distribution, but more numerous in species in northern than in tropical climates. Their toes are shorter than those of the Petrel family, and better adapted for walking on land, which they are often seen to do, especially during stormy weather, seeking for worms, crabs, larvæ, &c., &c., in ploughed land, or in damp meadows. They are active and somewhat noisy birds, living upon fish, worms, &c., and also on garbage of all kinds thrown out from ships, which they often follow for miles. They swim, or rather float buoyantly about for several hours daily, when not employed fishing, and occasionally repose on some sand-bank. Many ascend rivers and are seen hundreds of miles inland.

They breed usually on rocky islands, or on sand-banks, laying three or four eggs on the ground. They have a double moult; in some groups the head becomes black or brown during the breeding season, changing at the autumnal moult to grey or white; in others the head is pure white in summer, streaked in winter, the young are some time before they acquire the adult plumage. Some approach the Skuas and Petrels, and others the Terns.

The sternum has a double emargination, very small and shallow, and occasionally converted into foramina. The tongue is pointed with the tip cleft; the œsophagus is capacious, the gizzard small, becoming more muscular with age; the intestines moderately long, with two small cœca.

Gulls have been much sub-divided of late, the divisions being taken from the general form and tone of colouring. Bonaparte divides them into—

* *A. Lareæ.* Of large size; no hood in summer, but with a few spots or striæ on the nape and the back of the neck.

B. Xemeæ, usually of smaller size; feet longer and more slender; a dark hood in summer.

A. Lareæ.

Gen. LARUS, Linn. (as restricted).

Syn. *Clupellarus*, Bon.

Char.—Bill moderately long, strong, deep, much compressed; wings long, exceeding the tail; head and neck white, in winter streaked with brown. Of somewhat large size.

978. Larus fuscus, LINNÆUS.

GOULD, Birds of Europe, pl. 431—BLYTH, Cat. 1685—JERDON, Cat. 407.

THE LESSER BLACK-BACKED GULL.

Descr.—In summer plumage, head, neck, upper tail-coverts, and tail pure white; body above, including the wing-coverts, greyish-black; scapulars black, tipped with white; quills black, the 1st (and sometimes the 2nd quill) with a white spot near the tip; and the secondaries with a large border of the same colour.

Bill citron-yellow, red at the lower angle; eyelids orange; irides pale yellow; feet dull yellow. Length about 2 feet; wing 18 to 19 inches; tail 8; bill at front $1\frac{8}{10}$; tarsus $2\frac{1}{2}$.

In winter the head, round the eyes, and the upper part of the neck are streaked longitudinally with light brown; and the young are more or less spotted with brown throughout.

I obtained a young bird of this species far inland, near Jaulna in the Deccan, and have not again observed it, nor has it, that I am aware, been procured by any one else. Major Tickell, indeed, informed me that he had frequently seen in the harbour at Akyab a large black-backed gull, which was probably this species; or could it have been *Larus marinus*?

The lesser black-backed gull is found throughout the northern and temperate parts of the old world, breeding in Britain, often far inland, and laying three or four oil-green eggs blotched with brownish-black.

B. Xemeæ.

Gen. KROIKOCEPHALUS.

Char.—Bill rather slender, lengthened, compressed; the tip strongly hooked; lower mandible much angulated; wings exceeding the tail. Of large size; the head black in summer.

979. Kroikocephalus ichthyætus, PALLAS.

Larus apud PALLAS—L. kroikocephalus, JAMESON, J. A. S., VIII., 242—RUPPELL, Atlas, pl. 17—BLYTH, Cat. 1689.

THE GREAT BLACK-HEADED GULL.

Descr.—In summer plumage, the whole head and upper neck black; the feathered orbits white; the back and wings blue-grey; the upper tail-coverts and the tail pure white, with a black band; primaries with a black band increasing in width to the outermost one, which has the whole of the outer web and half of the inner web black; the rest of the first five primaries white, the others grey, white-tipped. Rest of the plumage pure white.

Bill red, yellow at the tip; irides brown; feet dull red. Length about 26 inches; wing 19 to 20; tail 7; bill at front $2\frac{1}{4}$; tarsus 3. The closed wing exceeds the tail by about $1\frac{1}{2}$ inch.

In winter the head and neck are white, with a few dusky markings down the nape and on the back of the neck; and the central tail feathers are sometimes grey. The young bird has the head white with brown streaks, the back and wings grey with brown marks, the tail mottled with brown at its base.

This fine Gull is rare in India, and I have only seen it on the sea coast, at Madras, and at the head of the Bay of Bengal, occasionally coming up the mouth of the Hooghly and other large rivers. It is chiefly an inhabitant of Northern and Central Asia, and Pallas, who observed it there, states that its voice is deep and like that of the Raven; and that it lays its eggs on the sand of some of the larger rivers. It has lately been killed in Europe, and even recently in Britain.

Gen. XEMA.

Syn. *Gavia*, Bonaparte.

Char.—Of small or moderate size; head becoming black or brown in summer; bill rather short, moderately stout; wings long; tail short; tarsus long.

980. Xema brunnicephala, JERDON.

Larus apud JERDON, Cat. 406—BLYTH, Cat. 1696.

THE BROWN-HEADED GULL.

Descr.—In summer the whole head and neck sooty-brown, darker where it terminates; orbital feathers white posteriorly; back and wings light grey; nape, hind neck, upper tail-coverts, and tail white; 1st primary black, inner web white at the base, and with a white subterminal band; the next has both webs white at the base, and a smaller terminal spot; the 3rd is grey with still less black, and no white, and so on, lessening to the 7th; the other quills are all grey.

Bill and feet fine red, the former darker at the tip; irides white. Length about 16 to 17 inches; wing 13½; extent 40; tail 5½; bill at front 1½.

In winter the head is white, generally somewhat soiled, often with a few faint dusky marks, and there is always a dark spot behind the ear-coverts. The young bird is coloured like the bird in winter plumage, but the tail has a dark band, and the irides are yellow-brown.

This Gull is very abundant throughout the whole of India, frequenting the sea coasts and ascending rivers for many miles; it is often found also in large lakes. It has the usual habits of its tribe, and frequently follows ships for miles to pick up any garbage that may be thrown overboard. Occasionally, but not often, I have seen it feeding in newly ploughed fields and in marshes. It does not, that I know of, breed here; its nidificaton indeed is unknown, but probably is in Cashmere and parts of Central Asia.

981. Xema ridibunda, LINNÆUS.

Larus apud LINNÆUS—GOULD, Birds of Europe, pl. 425—BLYTH, Cat. 1695.

The Laughing Gull.

Descr.—Head and upper part of neck deep reddish-brown, more extended in front and on the sides; lower neck white; eyelids white; upper plumage pale ashy; upper tail-coverts and tail white; first four primaries white, tipped and edged with black within, and the first with the outer web black; 5th and 6th nearly all black; the rest of the quills grey; beneath, from the breast, white, faintly tinged with rosy.

Bill and legs deep red; irides dark brown. Length 15 to 16 inches; wing 13; tail 5; bill at front $1\frac{3}{4}$; tarsus $1\frac{3}{4}$.

In winter plumage the head is white, with some dusky markings on the occiput and ears.

The Laughing Gull is not so common as the last species, but it is found in the Bay of Bengal, and at the mouths of the Ganges and the Hooghly in considerable numbers. It appears to be less common in the South of India, where I never observed it. This Gull is stated by Adams to breed on the lakes of Ladakh.

The Laughing Gull inhabits temperate and Northern Europe and Asia, breeding abundantly in Britain, and, in company with the common Gull, often feeding on ploughed lands. The eggs are said to be nearly as good as those of Plovers. The note is a hoarse cackle compared by some to a laugh; hence its specific name.

Larus (Xema) minutus is mentioned by Captain Irby as having been observed by him in Oudh in its winter dress. It is $10\frac{1}{4}$ inches long; wing $8\frac{3}{4}$. It has the occiput and nape streaked with black in winter; a dusky spot under the eye, and another longer one behind the ear-coverts. In summer the head and neck are black. As no other observer has noted the occurrence of this somewhat rare Gull, I have not at present included it among the Birds of India, and I do not know if Captain Irby preserved his only specimen. It is known to be found about the Caspian Sea, but is chiefly a more Northern bird.

Sub-fam. Sterninæ, Bonap.

Bill more or less long, entire, almost straight, compressed and pointed; the lower mandible with a more or less strongly marked angular gonys; nostrils longitudinal; wings long, pointed, very

ample; tail short and even, or long and forked; tarsus short, slender; toes short; web usually scalloped. Plumage mostly pale grey and white, or black and white.

Terns may be said to be Gulls with straighter and more slender bills, of a more delicate make, with longer wings and shorter legs. They spend the greater part of their lives on the wing, and always seek their food whilst flying, occasionally plunging into the water for it, but generally seizing it off the surface; a few hunt over marshes and fields, and eat grasshoppers and other insects. They fly with moderate rapidity in an unsteady wavering manner, and at a moderate height, and are noisy birds, screaming continually. Their short legs and feet are quite unsuited for active progression on the water, on which indeed they rarely alight. During the heat of the day, they rest on sand-banks in vast numbers. They have a vernal moult, in general confined to the region of the head, in a few extended to the lower surface.

In their anatomy, colouration, and changes of plumage, they quite resemble Gulls, as well as in their mode of propagation, and in the colour of their eggs.

Terns are found all over the world, many having a wide distribution. They are tolerably abundant throughout the greater part of India, swarming in some of our large rivers, and especially at the mouths of tidal rivers and estuaries. They are generally called *Tehari*, H., occasionally *Ganga-chil*, and *Mach-louka*, *i. e.*, the Ganges kite, and Fish-snatcher; *Ramadasu*, Tel., also *Samdrapukaka*, *i. e.*, Sea Crow; *Kivi* of the Gonds.

They may be sub-divided into several natural groups, distinguished both by slight structural features, and by habits. These groups are;—

1*st.*—Marsh Terns, with stouter and more Gull-like bill and body, and shortish tail.

2*nd.*—River Terns, with slender bodies, and long forked tails.

3*rd.*—Sea Terns, with very long wings and forked tail, and yellow bill.

4*th.*—Oceanic Terns and Noddies, with more or less black plumage; and 5*thly*, Skimmers (*Rhynchops.*)

Marsh Terns.

Gen. SYLOCHELIDON, Brehm.

Syn. *Thalasseus*, Boie.

Char.—Bill very stout, deep, culmen gently curving, gonys strongly angulated; tail short, emarginate; tarsus somewhat long.

These are the largest of all Terns, with very stout, red bills, and a short tail. They frequent rivers, as well as tanks and marshes.

982. **Sylochelidon caspius**, LATHAM.

Sterna apud LATHAM—BLYTH, Cat. 1698—Thalassites, n. sp., JERDON, Cat. 405—GOULD, Birds of Europe, pl. 414—S. strenua, GOULD?

THE LARGEST TERN.

Descr.—In summer, head above, nape, and ear-coverts pure black; mantle, wings, and tail pearl-grey, some of the first primaries dark-edged and tipped; back of neck and lower plumage white.

In winter the head is white, the occiput marked with numerous black streaks.

Bill coral-red; irides brown; feet black. Length 18 to 20 inches; wing 16; extent 49; tail 4½ to 5; bill at front 2¾; tarsus 1¾.

The wing reaches nearly 3 inches beyond the short tail.

This fine Tern is by no means uncommon in most parts of India, frequenting rivers, jheels, and tanks. It is generally seen alone, or in pairs, rarely a few together, and it feeds chiefly on fish and prawns. It does not appear to breed in this country, and probably retires to Central Asia for that purpose. It has been found over the greater part of Southern and temperate Europe, Asia, and Africa, and has occasionally been killed in England. Pallas states that it lays only two eggs, pale livid in colour with dusky spots.

S. strenua of Gould, from Australia, is apparently very closely allied to this bird, if not identical with it, and there are other species. *Phætusa* of Wagler, with three or four species, is closely related to *Sylochelidon*.

Gen. GELOCHELIDON, BREHM.

Syn. *Viralva,* Stephens.

Bill moderately strong, the culmen very slightly curved, gonys much angulated; tail forked; tarsus rather long. Bill black.

983. Gelochelidon anglicus, MONTAGU.

Sterna apud MONTAGU—BLYTH, Cat. 1699—JERDON, Cat. 400 and 403—SYKES, Cat. 232—S. affinis, HORSF.

THE GULL-BILLED TERN.

Descr.—In summer, the forehead, crown, and nape deep black; mantle, wings and tail light grey, paling on the tail; quills hoary-grey, the first five primaries tipped with dusky on their inner webs; sides of the head and plumage beneath pure white.

Bill and legs black, irides dark brown. Length 14 to 16 inches; wing 13 to 14½, exceeding the tail by 2½ inches; extent 38 to 40; tail 5 to 6; bill at front 1½; tarsus 1½.

In winter the head is white with grey streaks, the ear-coverts, and (more or less) round the eyes dusky. The young is somewhat similar to the adult in winter plumage, but has the primaries all dusky-grey.

This Tern is exceedingly abundant over all India, frequenting tanks, marshes, and rivers, and occasionally hunting over the fields. It feeds alike on aquatic food, and on grasshoppers, beetles, and other insects, and is a noisy bird. It does not breed in this country, that I am aware of. Mr. Brooks, Civil Engineer, Mirzapore, who has paid much attention to the nidification of these and other birds, informed me that he saw these birds passing up the Ganges in continued flocks, whilst other species were breeding at the time in the vicinity. The birds that visit India probably breed in Central and Western Asia. This species is known to breed in the marshes of Eastern Europe in numbers, being rare however in England, in spite of its very inappropriate specific name. Some closely allied races are separated specifically by Bonaparte and others.

Gen. HYDROCHELIDON, Boie.

Bill rather long, slender, very gently arched on the culmen, gonys with the ascending portion short; tail short, slightly forked; tarsus moderate; feet not fully webbed.

984. Hydrochelidon Indica, STEPHENS.

Viralva apud STEPHENS—BLYTH, Cat. 1700—SYKES, Cat. 230—S. similis, GRAY, HARDWICKE, Ill. Ind. Orn. pl.—JERDON, Cat. 398 and 404—S. hybrida, PALLAS—S. leucopareia, NATTERER—S. grisea, HORSFIELD—GOULD, Birds of Europe, pl. 424.

THE SMALL MARSH TERN.

Descr.—In summer plumage, the head and nape black; lores, and a broad line through the eyes, white; back of neck, mantle, wings and tail darkish-grey; chin, cheeks, and sides of the neck very pale grey, deepening on the breast; abdomen dull black; under tail-coverts white.

Bill lake red; irides brown; feet dull red. Length 10 to 11 inches; wing $8\frac{1}{2}$ to 9; extent 29; tail $3\frac{1}{2}$; bill at front $1\frac{3}{16}$; tarsus 1; extent 27. The wings reach 2 inches beyond the short tail.

In winter plumage, the forehead and round the bill white; top of head and nape more or less black, or dusky edged with white; the whole lower parts white; bill dusky-lake; feet dingy lake, or blackish with a red tinge brighter on the back of the tarsus and soles. The young have the head brownish, dusky on the occiput, and the usual mottled plumage above; the primaries dark ashy, the bill dark brown, reddish at the base; feet fleshy-brown.

This Tern is exceedingly abundant in India, frequenting marshes, tanks, and rivers, usually preying on aquatic food, not unfrequently hunting over fields, beds of reeds, and marshy ground, where it captures grasshoppers, caterpillars, and other insects. During the night, in some parts of the country, it roosts on thick beds of reeds, congregating in vast numbers; for some time after sunset, till nearly dark, indeed, it may be seen flying in scattered

flocks in an excited and hurried manner over the surface of the water. I do not think that the birds which I saw thus occupied were at the time engaged in capturing food.

This little Tern breeds in large churrs on the Ganges, and probably on most other large rivers. Mr. Brooks sent me the eggs procured near Mirzapore. It is found over the greater part of Europe, temperate Asia, and Africa. Bonaparte and others separate the Indian and African races from the European birds. To this genus belong *S. fissipes* and *S. nigra* of Europe.

River Terns.

These birds have longer and more forked tails than the Marsh Terns, and generally a more slender body; the bill is usually red or yellow. Two or three sub-divisions are distinguished by Systematists. They chiefly frequent rivers, and are less social and gregarious than the Marsh Terns.

Gen. SEENA, Blyth.

Char.—Bill stout, deep at the base, moderately curving to the tip, deep yellow; tail long and forked; feet short, web of small extent.

This form is somewhat intermediate between the Marsh Terns and the River Terns, having a stouter bill than most of the latter. In its habits, however, it is more a river bird. It is classed by Gray, in Hodgson's Birds of Nepal, as a *Sylochelidon*. There is only one species recorded.

985. Seena aurantia, GRAY.

Sterna apud GRAY, HARDWICKE, Ill. Ind. Zool, pl.—BLYTH, Cat. 1706—S. seena, SYKES, Cat. 230—JERDON, Cat. 399—S. brevirostris, GRAY, (the young)—S. roseata, HODGSON.

THE LARGE RIVER TERN.

Descr.—Whole head above glossy-black; upper plumage pale-grey; tail with the lateral feathers white; whole lower plumage white; the flanks tinged with ashy.

Bill bright deep yellow; irides brown; legs red. Length 15 to 16 inches. Of the larger one, extent 34; wing 11; tail 7½; bill at front 1½; tarsus 1.

This Tern is very common throughout the greater part of India, chiefly frequenting rivers, but now and then hunting over large tanks or inundated ground. It breeds on churrs and sand-banks throughout the country, laying generally three eggs. It hunts usually singly or in pairs, or in very small parties, and does not congregrate much.

Its geographical distribution is somewhat limited, as it does not appear to occur out of India, including Ceylon and Burmah, though it may perhaps be met with in the South of China. Mr. Brooks informs me that he found a large regular deposit of these Tern's eggs, upwards of a hundred, mixed with those of other species and also of the Skimmer, on a sand-bank in the Ganges. "I suppose," he writes, "that these were laid by birds which had not time to prepare a nest."

Gen. STERNA, Linn. (as restricted).

Bill slender, lengthened; tail much forked; the generic name *Sterna* is now applied to species similar to the common Tern of Europe. The bill is usually yellow or red, and the feet are red.

986. Sterna Nirundo, LINNÆUS.

BLYTH, Cat. 1708—GOULD, Birds of Europe, pl. 417.

THE EUROPEAN TERN.

Descr.—Whole head above with the nape black; plumage above pale grey; upper tail-coverts white; tail pale grey, the feathers white on their inner webs; chin, throat, ear-coverts, and sides of neck pure white; rest of the lower parts pearly-greyish-white; lower tail-coverts white.

Bill deep red; irides brown; legs red. Length 12½ inches; wing nearly 10; tail 4½; bill at front 1⅜; tarsus 1. The wings slightly exceed the tail.

In winter, the forehead and top of the head are white; and round the eyes, the occiput and nape, are blackish mixed with white.

The common Tern of Europe appears to be rare in Southern and Central India, but, according to Adams, is common on the Indus, and the rivers of the Punjab, and also on the lakes of Cashmere. It does not breed, as far as is known, in India. I procured it, on one

occasion only, on the lake at Ootacamund on the Neilgherries.

S. gracilis, Gould, appears to be a very closely allied species from Australia and Oceanica; and there are many other allied species recorded.

987. **Sterna Javanica**, Horsfield.

Blyth, Cat. 1711—S. melanogaster, Temminck—Jerdon, Cat. 397—Sykes. Cat. 229—S. acuticauda, Gray, Hardwicke, Ill. Ind. Zool. pl.

The Black-bellied Tern.

Descr.—Head and nape black; neck, mantle, wings and tail light grey; face, lores, and ear-coverts white; chin and throat white; neck and breast light pearl-grey; abdomen, vent, and under tail-coverts brown-black.

Bill orange-yellow; irides brown; legs vermilion-red. Length 12 inches; extent 26; wing 9; tail 6; bill at front $1\frac{7}{16}$; tarsus 1. The wings are slightly shorter than the forked tail.

In winter plumage the head is white mixed with dusky, and the abdomen is pearly-grey instead of black.

This very elegant Tern is seen in every river of India, hunting singly or in small scattered parties. It breeds on sand-banks in rivers all over the country, laying usually three eggs. Bonaparte classes it under *Hydrochelidon*.

Yarrell states that *Sterna paradisea* Brunnich, (*Dougalii*, Montagu) had been sent from India, but I have seen no other notice of this species occurring in this country.

Gen. Sternula, Blyth.

Size small, bill slender, long, yellow; tail short; head slightly crested.

This form in its yellow bill, and slightly crested head, approximates to the Sea-Terns, and in its habits is perhaps chiefly a Sea-coast species.

988. **Sternula minuta**, Linnæus.

Sterna apud Linnæus—Blyth, Cat. 1712—Jerdon, Cat. 401—Gould, Birds of Europe, pl. 420.

The Little Tern.

Descr.—In summer, fore-head white; the top and nape of the head, and part of the hind neck, with the lores, black; plumage above pale-grey; the tail almost white; lower plumage white, tinged with pearly-grey.

Bill yellow, black at the tip; irides brown; legs orange. Length 8 to 8½ inches; extent 20; wing 6½; tail 3; bill at front nearly 1¼; tarsus $\frac{7}{10}$. The wing exceeds the tail by about 1 inch.

In winter the black of the head is mixed with whitish, and the white of the fore-head extends further backwards. Some doubts have been expressed as to this species being identical with the European bird, but I cannot detect any marked distinction. Gould, P. Z. S., 1855, p. 50, gives *Sterna*——? like *minuta*, from Sindh. It is perhaps *orientalis* Licht.

This minute Tern is most abundant at the mouths of tidal rivers and back-waters on the Malabar Coast, and is more rare apparently on the East Coast. Inland I have only found it on the Ganges, in small parties. It nidificates in this country, on sand-banks in the Ganges, near Mirzapore, where it was found breeding by Mr. Brooks; the eggs are large for the size of the bird, ashy-green with small spots and blotches. In Europe, it is chiefly a Sea-coast bird. Swinhoe found it breeding on Formosa. A nearly allied species is *S. nereis*, Gould, from Australia.

Sea Terns.

These birds exclusively frequent the seas and the mouths of large rivers. They are elegant and lengthened in form, and of very powerful flight. They have all pale yellow bills, and black feet. There are several very closely allied species, and the distinctive marks are not very well ascertained. They appear to have a wide distribution.

Gen. Thalasseus, Boie.

Syn. *Pelecanopus*, Wagler.

Char.—Bill long and slender, much compressed; feet completely webbed; wings very long, exceeding or equal to the forked tail; tarsus moderate, compressed; the nude portion of the tibia long.

The hind head is more or less crested, and the feet are more fully webbed than in any other of the Terns.

Bonaparte separates *Pelecanopus* from *Thalasseus*, placing under the latter *S. cantiaca* of Europe; *affinis* Rüppell; and *bengalensis* of Lesson, with several American species; whilst under *Pelecanopus* he ranges *pelecanoides*, King; *poliocercus*, Gould, *Torresii*, Gould; *velox*, Rüppell, and *Bergii*, Licht.*

939. **Thalasseus cristatus,** STEPHENS.

Sterna apud STEPHENS—BLYTH, Cat. 1703—S. pelecanoides, KING—GOULD, Birds of Australia, VII. pl. 23?—S. velox, RUPPELL Faun. Abyss. pl. 13—S. Bergii, LICHTENSTEIN?—*S.* poliocercus, GOULD?

THE LARGE SEA TERN.

Descr.—Head, with the longish occipital crest, deep glossy-black; fore-head, lores, ear-coverts, nape, and all the lower parts silky-white; back, wings and tail rather darkish silvery-grey; edge of the wing and tips of the secondaries white; quills dark at the base and tip, hoary or silvery towards the terminal portion, with the inner web and shafts white internally, diminishing in quantity from the first.

Bill pale yellow; irides dark brown; legs black. Length 17 to 18 inches; wing 13 to 14; tail 7.; bill at front 2½; tarsus 1¼. The wings slightly exceed the forked tail.

Without actual comparison of specimens, it is difficult to determine the identity of this Indian Sea Tern with the African and Australian birds. Specimens vary much in size and proportions and in the length of bill. *S. velox* is said by Rüppell to be 15 inches long, to have the wing 14, and the bill 3½. *S. pelecanoides* of Gould's Australia, appears from the drawing to be somewhat larger than our bird; and in *S. poliocercus*, the wing, as represented, is nearly as long, being 13 inches. This last species is classed by Gray under *Sylochelidon*, but surely this is a mistake.

This fine Tern is found at the mouth of the Hooghly, does not ascend the river to any distance, but follows ships out to sea

* These Sea Terns especially much require a thorough revision and comparison.

for some miles. It is also found at Madras and on the Malabar Coast, at the mouths of rivers, and along the coast and back-waters. It breeds on islands on the Red Sea, and also in China.

990. Thalasseus bengalensis, Lesson.

Sterna apud Lesson—Blyth, Cat. 1704—Jerdon, Cat. 402—S. affinis, Rüppell, F., Ab., pl. 14.—S. Torresii, Gould, Birds of Australia VII., pl. 25—S. media, Horsfield—S. poliocercus, Gould?

The Smaller Sea-Tern.

Descr.—Whole head, including the fore-head and occipital crest, glossy-black; lores, face, sides of neck, and all the lower parts white; upper plumage light silvery-grey, paling slightly on the tail; quills dark grey, white on the inner portion of the inner webs.

Bill yellow; irides deep brown; legs black. Length 15 to 16 inches; wing 12; tail 6½; bill at front 2¼; tarsus nearly 1¼.

The same remarks apply to this species as to the previous one. *S. Torresii* is represented as having the wing 13 inches long, and the bill $2\frac{1}{10}$. *S. affinis* has the wing 11, and the bill 2½.

This species has the same haunts and habits as the last, and is perhaps more abundant, especially about the back-waters of Madras and the Malabar Coast. The bill is much more slender than in the large Sea-Tern. It breeds in islands in the Red Sea, and the eggs of both this and the last species are figured in one volume of the 'Ibis.'

A specimen from the Red Sea in the Museum of the Asiatic Society is smaller than Indian specimens, agreeing nearly with Rüppell's measurements of *S. affinis*.

A peculiar form of Tern, *S. inca*, Lesson, has been separated as *Larosterna* by Blyth, and *Inca* by Strickland; and the only other genus recorded is *Gygis*, Wagler, containing one (or two) pure white species of Tern from the Oceanic region.

Oceanic Terns and Noddies.

Gen. Onychoprion, Wagler.

Syn. *Haliplana*.

Char.—Bill long, slender, black; wings long; feet fully webbed; tail moderate, slightly forked; middle toe with the claw serrated.

These Terns are true Oceanic birds, and have a wide geographic distribution. In the serration of the mid-toe, they show their near affinity to *Anous*, from which they differ by their shorter bills and slightly forked tail.

The first is a link between the Sea-Terns and true *Onychoprion*, and I follow Blyth in classing it under the latter form, though perhaps it would range better under *Sternula*; it is however more decidedly Oceanic in its habits.

991. **Onychoprion melanauchen,** Temminck.

Sterna apud Temminck—Blyth, Cat. 1713—Gould, Birds of Australia VII., pl. 28—S. minuta apud, Horsfield—S. marginata, Blyth, (the young.)

The Black-naped Tern.

Descr.—Fore-head and head white; lores, and a line continued through the eyes gradually widening and extending over the nape and hind neck black; upper plumage pale grey; the first primary dark grey on the outer web; lower plumage white.

Bill black, reddish at the base of the lower mandible and tip; feet black. Length 12 inches; wing 9; tail $5\frac{1}{4}$; bill at front $1\frac{3}{8}$; tarsus $\frac{3}{4}$. The closed wings are about equal to the tail.

The plumage of the young bird is much mixed with blackish above, and shows, says Blyth, the propriety of ranking it with *Onychoprion*.—Bonaparte classes it under *Sternula*.

The black-naped Tern has been occasionally found in the Bay of Bengal. It extends through all the Malayan Islands to Australia. It is stated to breed on the Nicobar Islands, as probably others of the same group do.

992. **Onychoprion anasthætus,** Scopoli.

Sterna apud Scopoli—Blyth, Cat. 1714—S. panayana, Latham—Gould, Birds of Australia, VII, p. 33—S. infuscata, Lichtenstein—S. antarctica, Lesson.

THE BROWN-WINGED TERN.

Descr.—Fore-head white, top of the head black; nape pure silky-white, plumage above ashy-grey, with white margins to the feathers of the back; wings dusky-brown, black along the margin, over the radius, and edged in front with white; quills blackish, paler internally; face and lower plumage white.

Bill dusky-reddish, red towards the base of the lower mandible; gullet blackish; legs coral-red. Length 14 inches; wing 10; tail $6\frac{3}{4}$; bill at front $1\frac{5}{8}$; tarsus $\frac{7}{10}$.

This Tern is occasionally found in the Bay of Bengal; and is more common in the Indian Ocean. It abounds in the Red Sea. In its colouration it approaches closely to the Noddies.

Nearly allied is *O. serrata*, Forster, (*fuliginosus*, Gmelin and Gould,) found all through the Pacific Islands.

Gen. ANOUS, LEACH.

Syn. *Megalopterus*, Boie.

Char.—Bill long, slender, straight, very slightly curved towards the tip; gonys well marked, short; nostrils in a large groove; wings very long; tail slightly rounded; tarsus short; feet large, fully webbed; toe serrated.

The Noddies are well-known Oceanic birds, frequenting tropical and juxta-tropical seas. They differ from most other Terns by their even or somewhat rounded tails, and still more in the manner of their flight, which is steady and slow. They settle on the water when taking their food, which consists chiefly of molluscs and fatty matter, and they are very silent birds. Sundevall, who noted these differences, states that in their mode of life they resemble Petrels rather than Terns.

993. **Anous stolidus**, LINNÆUS.

Sterna apud LINNÆUS—BLYTH, Cat. 1715—GOULD, Birds of Australia, VII., pl. 34.

THE NODDY.

Descr.—Entirely sooty brown, with a darker band along the radius, and the quills and tail blacker, somewhat paler on the head and neck; lores dark brown, with a narrow white line dividing this from the hue of the head, which at times (probably in

summer) appears to assume a delicate purplish ash-colour as far as the crown, gradually shading into the brown of the occiput; lower parts slightly lighter than above.

Length 14½ to 16 inches; of one of the latter dimensions, wing 11½; tail 5½; bill 1½; one of the smaller dimensions had the wing 10¼; tail 6; bill 1¾; tarsus 1; middle toe 1¾.

The young bird has the feathers blackish, edged with white.

Bonaparte separates *stolidus* of Linnæus from the species figured as such by Gould.

994. **Anous tenuirostris**, Temminck.

Sterna apud Temminck Pl. col. 202—Blyth. Cat. 1716—A. leucocapillus, Gould, Birds of Australia, VII. pl. 36.?

The White-headed Noddy.

Descr.—Fore-head and crown pearly white; the rest of the plumage sooty-brown; quills blackish-brown, the first black on their outer webs.

Bill black; gullet pale-yellow; feet black with the web fleshy-yellow. Length 11 to 12 inches; wing 8¾; tail 5⅛; bill at front 2⅛; tarsus ¾; middle toe 1¼. Heuglin gives one as 14 inches long; wing 9½; and it is doubtful if Temminck's species be identical with Gould's; indeed Bonaparte separates it under the name *senex*, Leach.

These two species of Noddy, which resemble each other very closely, are occasionally killed in the Bay of Bengal and the Indian Ocean; and are found over a vast extent of tropical and sub-tropical seas. They breed on clefts of rocks, laying two or three whitish eggs with large brown blotches. The latter species is said to be found in countless numbers in the Red Sea, and to breed on islands there. Two or three other races are given by systematists as distinct; and some have been generically separated as *Procelsterna* by Lafresnaye.

Skimmers.

Gen. Rhynchops, Linnæus.

Char.—Bill with the upper mandible much shorter than the lower one, exceedingly compressed, long, straight, the tip of both mandibles truncated; wings long; feet short; webs excised.

These remarkable birds have the bill compressed at the point, as fine as a pen-knife, and flexible; the use it is put to is still a problem.

995. **Rhynchops albicollis,** Swainson.

Blyth, Cat. 1697—Gray, Ill. Gen., Birds, pl. 180.

The Indian Skimmer.

Descr.—Crown of the head, back and scapulars, rump and the two central tail-feathers sooty-brown or black, the quills somewhat darker, edges of the secondaries and tertiaries white; forehead, face to the eyes, the back of the neck, and the whole lower parts, with the sides of the lower back and rump and the lateral tail-feathers, white; wing beneath pale glossy-cinereous.

Bill deep orange, yellowish at the tip of both mandibles; irides brown; legs bright vermilion-red. Length 16½ inches; extent 44; wing 16; tail 4¾; bill, upper mandible 2⅞, lower mandible to gape 3¾; tarsus 1¼.

The young bird has the feathers edged with creamy-white, and the bill and legs dusky-yellow.

This remarkable bird is found throughout India, frequenting rivers, especially the larger ones. It associates in flocks of from twenty to fifty or more, and skims up and down the river with a peculiar flight, keeping close to the water, and now and then dipping its bill into the stream. It is asserted that it picks up small fish and crustacea, and it is quite possible that it does so occasionally, but I have examined several and never found any remains of those animals in their stomachs. I have generally discovered merely a little oily fluid, and I confess that I am ignorant of what it actually lives on. Some travellers have asserted that the African species feed on the ground, searching the soft mud with their beaks, but I have never seen the Indian birds so engaged, and doubt their doing so. At one time I was inclined to think that these birds perhaps fed at night, and had such a rapid digestion, that no remains of their food were to be seen during the day, but on one occasion I shot several, in company with Mr. W. Blanford, on the Irrawaddy, rather early one morning, and we found nothing but the usual oily fluid, and that in very small quantity.

The Skimmer breeds in April and May on sandy churrs, laying four, occasionally five eggs, of a pale stone-yellow colour with blotches of gray and brown, quite Tern-like. The young when hatched are stated by Burgess to be clad in a whity-brown down with dark spots. Mr. Brooks writes me that he found the young Skimmers hatched by the 15th April at Mirzapore, and that "it was amusing to see an army of some hundreds of these little fellows (Tortoise-shell looking things) running steadily a couple of hundred yards before us. They run well, and when we reached the end of the sand-bank, they attempted to swim off, while many squatted down. They did not make much way swimming, and sank very deep in the water." Three other species are recorded from Africa and America.

Tribe, PISCATORES—Blyth.

Pelicanidæ, Vigors.

Feet entirely webbed, the hind toe articulated on the inner side of the tarsus, directed inwards and in some slightly forwards, joined to the inner front toe by web, forming a most powerful oar; legs short; wings long or moderate; bill varied.

The birds of this tribe, though so highly aquatic, perch well on trees, and indeed all evince strong scansorial tendencies. Like the last tribe of the *Grallatores* (the *Cultirostres*), these birds also breed mostly on trees or rocks, and the young are helpless at birth, remaining long in the nest. They have generally some naked skin at the base of the bill and throat, which is more or less extensile, and the tongue is very small. The nostrils are pervious in the young, all but closed in the adult. The stomach is thin, large, often furnished with an accessory sac; the intestines are short, and they have small cæca. The sternum is wide, barely emarginate, and the furcula is anchylosed to it. The eggs of many are encased in a soft absorbent chalky substance covering the hard shell; and they are said not to moult their plumage before the second autumn. They are all very voracious birds feeding chiefly on fishes.

The *Piscatores* may be divided into,—1st, Flying Fishers, *Phaetonidæ*,—2nd, Plunging Fishers or *Sulidæ*,—3rd, Pouncing

Fishers—*Attagenidæ;* 4th, Swimming Fishers—*Pelecanidæ;* and 5th, Diving Fishers—*Graculidæ.*

Fam. PHAETONIDÆ.

Bill somewhat as in the Terns, moderate, stout, straight, but curved on the culmen, the margins finely dentated; and the nostrils pervious at all ages; wings very long; tail with the two central feathers greatly elongated; tarsus very short; toes moderate, webbed to the tip; lower part of the tibia nude; hallux short.

The Tropic birds, or Boatswain-birds of Sailors, are well known frequenters of all tropical regions of the Ocean, and are generally seen throughout the Bay of Bengal flying about ships, and often very far from land. They appear rarely to resort to the shore except to breed, and they perch and nidificate on trees. They are nearly related to the Gannets on one side, and on the other perhaps to the Terns; their flight is very rapid.

Gen. PHAETON, Linnæus.

Char.—Those of the family.

996. **Phaeton rubricauda,** BODDAERT.

P. æthereus apud BLYTH, Cat. 1735—P. phœnicurus, GMELIN —GOULD, Birds of Australia, VII, pl. 73.

THE RED-TAILED TROPIC-BIRD.

Descr.—Silky-white, with a pink gloss; a black crescentic mark in front of and behind the eye; the stem of the first primaries, the middle of some of the tertiaries, some of the feathers of the flanks, and the two lengthened central tail-feathers red, the latter white at their base.

The young bird has the whole upper surface with black, arrow-shaped marks; the first of the primaries black externally, and the tertiaries chiefly black with a white border; tail white, the stems black at the base.

Bill red; feet red. Length including the central tail-feathers 24 to 25 inches; wing 12 to 14; outer tail-feathers 5; bill at front $2\frac{1}{2}$; tarsus 1; middle toe $1\frac{5}{8}$.

This Tropic bird is found throughout all the Indian and Australian tropical regions, and is frequently seen in the Bay of Bengal, and in the Indian Ocean. Its voice is said to resemble that of *Sterna Caspia*. Sundevall, who notices this species (apparently) under *P. ætherius*, states that its flight is less rapid than that of the next bird. It is much larger, but the central tail-feathers are not nearly so long.

997. **Phaeton candidus**, Brisson.

Lepturus apud Brisson—Blyth, Cat. 1736—Pl. Enl. 369—P. flavirostris, Brandt.

The White Tropic-bird.

Descr.—Plumage white; a black mark in front of the eye, extending through the eye along the sides of the head; a black band on the wings continued by the tertiaries and scapulars; first primaries black externally, the tip white; tail pure white, the stem black.

Bill yellow; feet dusky. Length 29 inches; wing 11; bill at front 2; tarsus $\frac{3}{4}$; middle toe $1\frac{3}{8}$.

This Tropic bird frequents tropical seas, and has, it is stated, been killed in the Bay of Bengal. It is said to breed on high trees in the Mauritius and elsewhere. It is probably the species referred by Sundevall, with doubt, to *P. melanorhynchus* (No. 102 of his list.) He states that "during flight they frequently turn the head and look behind them; they seem to be very inquisitive, and often come near to examine the pennant. They would fly round it for half an hour, and look at it from every side as though they would bite at it, fly away, and return several times. Occasionally they plunged straight down into the water to catch flying-fish."

Fam. Sulidæ, Bonap.

Bill stout, straight; wings long; tail moderate, wedged; feet fully webbed; size large. Of Oceanic habits. The plunging-fishers comprise only one genus.

Gen. SULA, Brisson.

Syn. *Dysporus*, Illiger.

Char.—Bill lengthened, compressed, straight, thick at the base, acute and compressed at the tip; margin serrated; culmen convex; upper mandible furrowed; nostrils minute, almost impervious, in a long groove, supposed to be wanting; wings very long; tail moderately long, wedge-shaped; tarsus short; claw of the middle toe pectinated externally.

The Gannets are much on the wing, from which they always take their prey, plunging down on it from a considerable height, some into the water, others catching their prey (flying-fishes) in the air. Their legs are not placed very far backwards, and they can walk with the body horizontal. Sundevall remarks that they fly somewhat heavily, with considerable flapping of their wings; that they are found far out at sea, but generally over banks, where the water is not very deep, and that, like the Tropic-birds, they often look behind them during flight. He also states that he saw them in small flocks in winter, but either alone or in pairs in June and July. They are well known to sailors for their stupidity, alighting on vessels and allowing themselves to be caught easily. They nestle on rocks, and lay a single egg. Two species are occasionally found in the Bay of Bengal and the Indian Ocean. The first species is separated by Bonaparte as *Dysporus*.

998. Sula fiber, LINNÆUS.

Pelecanus apud LINNÆUS—BLYTH, Cat. 1738—GOULD, Birds of Australia, VII, pl. 78—P. sula LINN.

THE BOOBY.

Descr.—Above dark-brown, darkest on the back, quills and tail; lower parts white.

Length 26 to 29 inches; wing 16¼; tail 7½; bill at front 4; tarsus 1⅞; middle toe 3¼. The young has the lower parts also brown.

This species occurs in the Bay of Bengal and the Indian Ocean, and I received a specimen from the Malabar Coast. Mr. Blyth informed me that one captured on board a Cape Steamer disgorged a quantity of flying-fish; he believes that it occurs chiefly where

those fishes abound, and that it does not plunge into the water for its food like S. *bassana*. It is known to breed on Ascension Island, which is hence called by some of our sailors Booby Fair.

S. parva, Gmel., is given by Bonaparte as another species of restricted *Dysporus*. The next bird is the type of *Piscatrix* of Reichenbach.

999. Sula piscator, Linnæus.

Pelecanus apud Linnæus—Blyth, Cat. 1739—Gould, Birds of Australia, VII, pl. 79—S. candida, Brisson.

The White Booby.

Descr.—White, the rump and upper tail-coverts slightly mottled with dusky; and the wings and tail dusky-black.

Bill and feet red. Length 26 to 27 inches; wing 15 to 16½; tail 7½ to 8; bill at front 3⅜ to 3$\frac{7}{10}$; middle toe 3$\frac{6}{10}$ to 3¾; tarsus 2.

Occasionally seen in the Bay of Bengal and Indian Ocean.

To restricted *Sula* (and if Mr. Blyth's surmise above noted be correct, the distinction extends to the habits) belongs the well known *S. bassana*, or Solan Goose; also *S. australis*, and *S. personata*, Gould, with two or three other species.

Fam. Attagenidæ.

This family comprises only one genus, with two known species.

Gen. Attagen, Mœhring.

Syn. *Fregata*, Cuvier, *Tachypetes*, Illiger.

Char.—Bill long, much hooked at the tip, both mandibles being well bent downwards; wings very long; tail long, forked; tarsus short, partially feathered; feet small; web slightly developed; claws short, curved.

The Frigate birds have their wings very highly developed and live almost entirely in the air, taking their prey on the wing, pouncing on flying-fishes as they rise from the water, and also pursuing Boobies and other birds till they disgorge or drop their prey, which they dexterously seize before it reaches the water. Their form and habits so much resemble those of some of the Raptores,

that Linnæus named the common species *Aquilus*. Bonaparte remarks of this genus, 'scarcely *Totipalmate*, rather the first of the *Longipennes*.'

1000. Attagen aquilus, Linnæus.

Pelecanus apud Linnæus—P. leucocephalus, Gmelin—Gould, Birds of Australia, VII, pl. 71.

The Frigate Bird.

Descr.—Adult, entirely glossy-black; young bird with the head, neck, and lower abdomen white; the rest of the body glossy-black.

Length 37 inches; wing 26; tail 15½. Bill and feet red.

I received a specimen of this bird, in young plumage, which was shot on the Malabar Coast off Mangalore, and believe that it is not unfrequently seen in the Bay of Bengal and Indian Ocean. Sundevall states that he observed it but rarely further north than 10° N. L. It flies high in circles like a bird of prey and occasionally plunges into the water after flying-fishes. He further states that "the feet of this bird are more like those of Rapacious than of Natatorial birds, the membrane being scarcely larger than that found at the base of the toes of many birds of prey. The plumage has also a rather anomalous appearance for a water-bird, especially in the feathered tibia. It constitutes a truly transitional form between the Rapacious and Natatorial birds."

This bird is said to breed on Ascension Island, laying one egg on the ground, which, says Barton (Vide Linn., Trans. XIII., 1), is incubated by the male.

A second species of Frigate bird is *A. minor*, Gmel., (*ariel*, Gould) like the last but much smaller, from Australian seas.

Fam. Pelecanidæ.

Bill enormous, with a large mandibular pouch. Of very large size. They chiefly frequent inland lakes and rivers, and form one genus.

Gen. Pelecanus, Linnæus.

Char.—Bill very long, straight, broad and flattened, the tip well hooked; nostrils concealed in a long groove extending the

whole length of the bill; lower mandible thin, of two narrow flexible bony arches supporting a huge extensile pouch; orbits nude; wings long, very ample, 2nd primary longest; tail short, rounded, soft; tarsus short, stout; feet large.

Hawasil, H.—*Bellua*, *Birua* or *Bherua*, in Behar. *Gugun-bher* in some parts—*Gang-goya* of some—*Gara-polo*, or *Gora-pallo*, Beng.—*Peyn* Sindh.—*Chinka-batu*, Tel.—*Madde-pora*, Tam.

Pelicans are well known birds of gigantic size, which, in spite of their heavy bodies, are remarkably buoyant in flight, and several species migrate to vast distances, flying in regular lines. They occur all over the world. They fly with their necks drawn back. On land they are not very agile, having a waddling gait. They feed chiefly on fishes, which they catch simply by putting down their heads whilst swimming; and they never dive. They nidificate on trees, making a large nest of sticks.

There are several species found in India, but the determination of these I have found to be a work of considerable difficulty, and I am by no means satisfied that the identifications I have adopted are perfectly correct.

There are two forms distinguishable by the termination of the frontal plumes. In the one, typified by *P. onocrotalus* and its allies, the frontal plumes gradually narrow and come to a more or less fine point; in the other, typified by *P. crispus*, the frontal feathers advance without narrowing much and terminate in a square and somewhat emarginate ending. Of the first form we have apparently three species in India.

1001. **Pelecanus onocrotalus**, Linnæus.

Shaw, Zool.—Latham. Gen. Hist.—Gould, Birds of Europe, pl. 405?—P. Javanicus, apud Blyth, Cat. 1741 A.—Lichtenstein, Abhand. Akad. Berlin, 1838, pl. 111. f. 1.

The European Pelican.

Descr.—Plumage pure white, in some tinged faintly with rosy; primaries and winglet black; the first primaries with white shafts, and the secondaries with the outer webs white, and the inner grey;

occiput with a very small crest of the same kind as the feathers on the neck, short and close; rump and tail white; the feathers of the back and wing-coverts short and rounded, all the feathers white-shafted. Lichtenstein however states, with reference to this point, that in females these feathers are always more rounded than in the males, and that moreover the tuft or crest is smaller.

Bill reddish at the base, yellowish towards the point, with a crimson central line extending to the tip; nude orbits fleshy; pouch yellowish mixed with red and purple; irides brown or grey; legs and feet livid fleshy with a tinge of yellow. Length of a specimen in the Museum of the Asiatic Society 5 feet 8 inches; wing 28; tail 8; bill 15½; tarsus 4½; middle toe and claw 5¼. The bill is said to be above 16 inches occasionally. Shaw and Latham both give the expanse as 15 feet, but that is evidently erroneous. Weight 25 lbs. (Pallas.)

This bird certainly appears to be the true *onocrotalus* of Linnæus and the older authors. All describe the crest as *very small* and Shaw's figure corresponds exactly with the specimen in the Asiatic Society's Museum from India, and one lately received from Hungary as true *onocrotalus* does not differ. Pallas correctly says that the feathers of the neck are small, and soft, and that those at the nape are a little longer, forming a sub-crest. He however gives smaller dimensions than those above.

Lichtenstein, in his paper in the Transact. Royal Academy of Berlin for 1838, states that "the cheek feathers are broad and rounded, and that those of hind head are very small short feathers, collected together into a small tuft which, in young birds, or in adults by abrasion, are often scarcely perceptible." In the specimens examined the feathers of the neck are open, flimsy and downy, slightly curving upwards near the occiput where they form a small, slightly recurved tuft.

Bree in his Birds of Europe figures, apparently, the crested Pelican, *P. mitratus* of Lichtenstein, as *onocrotalus;* and Blyth also considered the fully-crested bird to be the common European species. I see however that Gurney, in a paper on the Birds of Africa, recognises *P. mitratus* as a distinct species.

This large white Pelican is a regular visitant to India during the cold weather, sometimes appearing in considerable flocks, and clearing whole tanks and jheels of their fish, to the dismay of the fishermen. They form a dense line across the tank, and regularly hunt it from one end to the other.

1002. **Pelecanus mitratus,** LICHTENSTEIN.

Abhand. K. Akad. Berlin, 1838, p. 436, pl. 111., f. 2—P. onocrotalus apud BONAPARTE and BREE—also of BLYTH, Cat. 1740—and perhaps of other authors; variety referred to by Pallas, Z. R. A., II. p. 296, note.

THE CRESTED PELICAN.

Descr.—Occiput with a long pendent crest of narrow feathers, 4 or 5 inches long; general colour milk-white with a faint roseate tinge sometimes, but generally without a tinge of rosy; the lower throat pale yellowish in old birds; some of the scapulars edged with black; primaries dusky; secondaries grey on their outer webs, blackish internally; tertiaries almost white externally, grey within; tail white.

The frontal feathers are not so far prolonged as in *onocrotalus;* the feathers of the head and neck are very close, soft, silky fur-like, and lengthened, very different from those of the last species. The feathers of the back and wing-coverts are lengthened and slender.

Bill (as figured) yellow mixed with red, and with a red tip; orbits and pouch yellow; irides red; feet fleshy-red. Length of a specimen from Dacca in the Asiatic Society's Museum, 5 feet 2 inches; wing 27 inches; tail 8; bill nearly 12; tarsus nearly 4; mid-toe and claw nearly 5.

This species is not as yet generally acknowledged. Bonaparte gives it as a synonym of *P. rufescens*, evidently however without examination, as in the form of its frontal plumes it resembles *onocrotalus* and not *rufescens*. Lichtenstein states that its characters, as given above, are constant. Blyth, as previously stated, looked upon it as true *onocrotalus*, misled no doubt by the erroneous descriptions of authors, whilst Gurney fully acknowledges it. *Vide Ibis* 111, p. 135.

The specimen in the Museum of the Asiatic Society sufficiently agrees with the characters given above. The bird figured by Bree as *P. onocrotalus* has the occipital crest full and long; the plumage is somewhat rosy, and the feathers on the breast are golden-yellow; it might rather be *mitratus*, or *P. minor* of Rüppell. The whole plumage, in the drawing, is more or less lanceolate. Is it possible that *P. mitratus* should be the male, and *onocrotalus*, as previously described, the female?

As far as is known, this crested Pelican is much more rare than the last, or than the next species, and I know nothing particular of its habits or distribution in India. It appears to be spread through part of Asia, Africa, and likewise South-eastern Europe.

1003. **Pelecanus javanicus**, Horsfield.

Lin. Trans. XIII. 197—Blyth, Cat. 1741 (in part)—P. onocrotalus of some Indian writers—perhaps of Pallas—P. roseus, Gmelin—P. minor, Rüppell, Mus. Senken., and Ueber. Faun. Abyss., pl. 49?—P. calorhynchus, Hodgson.

The Lesser white Pelican.

Descr.—White, in fresh plumage with a highly roseate tint; primaries dusky; secondaries grey externally; tertiaries whitish, with broad black margins on each side, internally greyish; tail white.

The feathers of the head and neck are disposed much as in *P. onocrotalus*, but in general there is a more marked, small occipital crest, and the feathers of the breast, in some, are rich golden-yellow.

Bill blue in the centre, red and yellow on the sides, the tip blood red; lower mandible bluish posteriorly, yellow in front; skin of the face pale fleshy; pouch yellow, veined with purplish red; irides blood red; legs fleshy pink. Length 4 feet 8 inches; wing 24 to 25 inches; tail 6½; tarsus 4; mid-toe and claw 4½; bill 12 to 13.

I find it very difficult to determine what the small white Pelican of India really is, having but few specimens to examine and none except from India. Horsfield originally described *javanicus* as white with a short crest, the primaries black, the secondaries and feathers of the back (scapulars or tertiaries) margined with black, and the shaft white, the tail white, about 4

feet long. This agrees well enough with our bird. *P. roseus* from Manilla is described as rosy white throughout, and of the size of a goose. Rüppell describes his *P. minor* as similar to *onocrotalus*, but much smaller, the nude skin of the face less extended, and the tuft or crest more occipital than the corresponding feathers of *onocrotalus*, the feathers of the lower part of the neck lengthened, and pale yellowish, and the wing-coverts more rounded and less pointed than in *onocrotalus*. Length 4 feet 4 inches; wing 23½ inches; tarsus 4⅙; mid-toe 4⅓. Bill yellowish at base, blue in the middle, and yellowish grey on the sides; orbits and pouch yellowish.

This appears to be the most abundant of the white Pelicans that visit India. I am not aware of its breeding in this country.

Fore-head with the frontal plumes not narrowed in front, but truncated and emarginate; bill with a double series of impressed dark spots. Can Rüppell's bird be the female of *P. mitratus?*

1004. **Pelecanus Philippensis,** Gmelin.

Blyth Cat. 1742—Pl. enl. 965—P. manillensis Gmelin?—P. rufescens, Gmelin?

The Grey Pelican.

Descr.—Head and neck greyish-white, the feathers rather scant, short, and somewhat fur-like; a short occipital crest of porrect or slightly recurved feathers, brownish tipped with greyish-white; upper plumage greyish-white, the feathers of the back, rump, and upper tail-coverts being dingy-whitish, tinged with grey; scapulars grey with black shafts, and the feathers white at the base; lesser and median coverts greyish-white; greater coverts grey, with black shafts; primaries dusky-grey with black shafts, white at the base, and with white shafts; secondaries and tertiaries much the same; the tail grey, the feathers also black-shafted, and the basal half or two-thirds of the inner webs white, as well the base of the shaft; lower plumage greyish-white, the feathers lanceolate, pure white in the centre and tip, with grey margins, and brownish at the base; under tail-coverts greyish-white, slightly mottled with brownish; under wing-coverts whitish.

Bill pale bluish, tinged with carneous, yellow at the tip; naked face and gular pouch pale livid fleshy, the latter varied with reddish lines, and faintly tinged with yellow; irides pale brown; legs fleshy. Length 5 feet 2 inches; wing 24 inches; extent 8 feet; tail 8 inches; tarsus 3; bill at front 12 to 14; middle toe 4.

The young bird has the plumage uniformly pale brownish-grey, or rufous-grey, the feathers being grey in the centre, pale rufous-brown in the margins; back and rump white; quills and tail as in the adult bird.

This bird is somewhat allied to *P. rufescens*, which has the frontal plumes similarly arranged, and is of about the same size, and one specimen from India, in the Museum of the Asiatic Society, marked by Blyth *Philippensis*, appears to me to be undoubted *P. rufescens*. It has the back fine pale vinous rufescent; upper tail-coverts white, and tail grey; but the character of the plumage is much more lanceolate than is the case in general with *Philippensis;* the bill, however, is marked precisely as in that species, a condition which does not appear to be noticed in the descriptions of *rufescens*. Hartlaub, however, had previously considered them identical, for which he was rebuked by the Prince of Canino. Lichtenstein remarks that "the characters attributed to *P. Philippensis* appear to agree so well with those of *rufescens* that they must be considered the same bird." As I have lately examined a good many specimens of the grey Pelican, none of which showed any rufous on the back, I am hardly prepared to accept this conclusion fully; but, from the extreme resemblance in all other points shown by the Indian specimen above alluded to, it must either be conceded that *rufescens* is a fully adult state (perhaps of one sex) of *Philippensis*, or that *P. rufescens*, if distinct, is also an inhabitant of India. Lichtenstein also states that he conjectures that *P. roseus* and *P. manillensis* are the same species; but it will be seen that I have already concluded *roseus* to be the same as *Javanicus*.*

The grey Pelican is the most abundant species found in India, occurring in all districts where rivers and tanks abound, and breed-

* I trust that observers favorably situated will procure specimens of *all Pelicans*, and favor me with their observations, or send the birds to the Museum of the Asiatic Society, Calcutta.

ing in the country. I have visited one Pelicanry in the Carnatic, where the Pelicans have (for ages I was told) built their rude nests, on rather low trees in the midst of a village, and seemed to care little for the close and constant proximity of human beings. I have also heard of many other breeding places in different parts of the country. This species occasionally congregates in large flocks, but not perhaps in such numbers as some of the white Pelicans do.

This Pelican is used by the fishermen of some parts of Eastern Bengal as a decoy to assist in catching certain kinds of fish, which are attracted, it is said, by the oily secretion exuding from their skins. They are tied to the boats sometimes with their eyes sewn up. The species of fish that are most attracted in this way are the different kinds of *Colisa* and *Anabas*. It is asserted that the white Pelican has not this oily secretion.

Other species of Pelicans are *P. crispus*, of Eastern Europe, larger, it is said, than *onocrotalus*, of a silvery white, the feathers of the occiput lengthened, crisp and turning forwards, and with the frontal plumes emarginate: and *P. conspicillatus*, from Australia. Three American species are recognised, *P. fuscus*, L.; and *P. thagus*, Molina, separated as *Onocrotalus*, Wagler; and *P. trachyrhynchus*, Latham, the type of *Cystopelicanus*, Reichenb.

5th.—Diving Fishers.

Fam. GRACULIDÆ, Cormorants.

Syn. *Phalacrocoracidæ*, Bonap.

Bill moderately long, cylindric, hooked at the tip, grooved; wing moderate; tail feathers stiff; upper tail-coverts exceedingly short; lower tail-coverts also short.

These are moderately large birds, of more or less black plumage, which fly, swim, and dive well; they frequent both inland lakes, and rivers and seas. They have the power of inflating the gullet to enable them to swallow considerable sized fish. They are found all over the world, nidificating on trees, and laying three or four pale bluish-green eggs. The young are clothed in black down. The stomach is capacious, the intestines moderately long, and there are two small cœca.

Bonaparte subdivides them into several genera.

Gen. GRACULUS, Linnæus.

Syn. *Carbo*, Meyer—*Phalacrocorax*, Brisson.

Char.—Bill moderately long, slightly raised at the base, the tip well hooked; nostrils, a small narrow line, apparently not pervious; under mandible truncated; orbits and throat more or less nude; tail moderate or rather long, of 14 stiff feathers, cuneate; wings rather short.

There are three species in India. The first two on our list belong to Bonaparte's *Phalacrocorax*, are of large or moderate size, the beak large, the 2nd quill the longest, and the tail moderate, of 14 feathers.

1005. Graculus carbo, LINNÆUS.

BLYTH, Cat. 1744—Carbo cormoranus, MEYER—JERDON, Cat. 395—*Gho-gur*, H.—also *Pan-kowal*, or *Pan-kowa*, H.—*Bonta-kaki*, Tel.—GOULD, Birds of Europe, pl. 407.

THE LARGE CORMORANT.

Descr.—Black, the feathers of the back, scapulars, and wing-coverts, bronze colour with black edges; face, sides of the head, and chin, white, and a white spot on the thigh-coverts. In breeding plumage the male bird assumes a lot of white hair-like feathers on the neck, very conspicuous in some examples, less so in others.

Bill brownish; irides sea-green; facial skin pale greenish; gular pouch deep yellow; feet black. Length 32 to 34 inches; extent 60; wing 14; tail 7½; bill at front 2½; tarsus 2¼; middle toe 3¼.

The large Cormorant of Britain is found throughout India, is more rare towards the south, and is there chiefly found in rivers that run through forest and hilly ground, but occasionally occurs in large tanks in the open country. In the north of India it appears more common, especially in the well-watered province of Bengal where it chiefly frequents rivers, and on rivers within the Himalayas. It is rather strange that it is not included in Gray's List of Hodgson's Nepal Birds. It is very generally found in pairs or singly, occasionally four or five together. I am not aware if it breeds in this country, but it probably does so in suitable spots.

The Cormorant is found over all Europe, Asia, and great part of Africa.

The next species is placed by Bonaparte (contrary to his usual practice) as variety b. of *Phalac. carbo.* It appears to me a most distinct, though somewhat variable species as to colour, having a very slender bill and a considerable gular expanse.

1006. **Graculus Sinensis,** SHAW.

Pelecanus apud SHAW—BLYTH, Cat. 1745—Phal. leucotis, BLYTH—C. albiventer, TICKELL ?—Carbo leucogaster, MEYER—P. fuscicollis, STEPHENS—P. filamentosus, TEMM. and SCHLEG. ?

THE LESSER CORMORANT.

Descr.—Adult, head and neck shining black; feathers of the back and wing-coverts bronze color as in the last; throat white, this color extending towards the eye, and passing into pale brown on the cheeks; lower plumage deep black.

Bill dusky-brown, reddish beneath; gular skin yellow; irides verdigris blue; nude orbits black; feet black. Length 24 to 27 inches; extent 36 to 40, and upwards; wing 11; tail 5¼ to 6; bill at front 2¼; middle toe 2¾. One specimen from Central India is recorded as 29 inches long, with the tail 7.

In breeding plumage this Cormorant assumes some white specks on the fore-head and above the eyes, and a white tuft behind each ear; the chin, however, is then black. The young birds are more or less brown above, white beneath.

Blyth writes me that *Carbo filamentosus,* Tem. and Schl. *(capillatus* on the plate) is perhaps the same as this species. It is said to be 31 inches long, with the wing 12; tail 5½; this is somewhat larger than most Indian examples.

This species of Cormorant has an equally wide distribution in India with the last, and is perhaps indeed more generally spread. I have procured it on the Carnatic; Tickell in Central India; and Blyth has obtained it from Bengal and the countries to the eastwards, where it is perhaps more abundant than in Western India. If Mr. Blyth is correct in considering *C. filamentosus* to be the same species, which is very likely, it extends through Central Asia and China to Japan. There is no record of its breeding here, but it

probably does so, as I have killed it at all seasons. Most of the specimens procured are in imperfect plumage, having the lower parts white. Like the last, it is generally met with in pairs or alone, occasionally in small flocks.

This is supposed to be the species of Cormorant used by the Chinese to catch fish. They are caught when young and trained. A line is attached to them, and they are put over the sides of the boat, and as soon as they have taken a fish are hauled in again, and the fish taken from them. They are prevented from swallowing their prey by a ring placed round their necks.

The only other species of Cormorant found in India is placed by Bonaparte under *Haliæus*, characterized by their small size, short bill, having a small nude gular region divided by a strip of feathers, and the tail somewhat long, of 12 feathers.

1007. **Graculus Javanicus,** Horsf.

Carbo apud Horsfield—Blyth, Cat. 1748—Jerdon, Cat. 394—C. melanognathus, Brandt—Ph. niger, Vieillot, apud Bonaparte—P. pygmœus, Pallas, of some—Sykes, Cat. 227—Hardwicke, Ill. Ind. Zool. pl.—*Pan-kowa*, H.—Jograbi, of some falconers—*Niru-kaki*, or *Niru-kodi*, Tel.

The Little Cormorant.

Descr.—In winter the plumage is more or less black, the feathers brown-edged on the neck, breast, and back, and the chin white. In full breeding plumage, in June or July, the whole body is glossy black; the head with a short occipital crest; the wing-coverts, scapulars, secondaries and tertiaries, as it were glossed with silvery, with a black margin, and the interscapulars with a narrow silvery centre; a white triangular spot on the top of the head; lores white, and a broad line through the eyes with white hairs, and several also on the nape and sides of the neck; chin black.

Bill brown, livid purple in the height of the breeding season; gular skin and orbits blackish, livid in summer; legs blackish, dusky livid at the same season. Length 19 to 20 inches; extent 32; wing 8½; tail 5½ to 6; bill at front 1¼; tarsus 1¼; middletoe 2.

The young have the upper plumage brown, mixed with blackish, and the lower parts reddish brown, white posteriorly, and the throat whitish.

This small Cormorant has been occasionally confounded with the nearly allied *P. pygmæus*, and *P. africanus*, but the latter species has the back, scapulars, and wings always spotted, and has a longer tail; otherwise they are very closely alike. In Bree's figure of *pygmæus*, certainly very closely related, the young is represented as entirely white beneath, in which state I have never seen our Indian species. Bonaparte allots *pygmæus* of Pallas to the North African race, also found in Asia and Western Europe, and figured by Gould in his Birds of Europe, pl. 409, and gives two other distinct species from India, viz., *melanognathus*, Brandt, figured Hardwicke, Ill. Ind. Zool. 2., pl. 56, sent from Pondicherry; and *niger* Vieill (*pygmæus* of Museums), sent by Macé from India; besides *javanicus* of the Malayan region. Except that he gives unusually small dimensions to his *niger* (13 inches), which is probably an erroneous measurement, I see nothing in his description militating against all three being the same species. Whether, however, the Indian species, or the one from Northern Africa, be the one described by Pallas, it is difficult to decide, and I have followed the ordinary nomenclature.

The Little Cormorant is exceedingly common in every part of India, frequenting alike rivers, lakes, tanks, and pools of water by the road side, and is very tame and fearless. It hunts singly or in pairs, or in small scattered parties, but collects in numerous flocks for roosting, on trees overhanging the water, or occasionally in large beds of reeds. It breeds on trees, occasionally in the midst of villages, having numerous nests on the same tree, and laying four or five pale green eggs.

There are very numerous species of Cormorants, too many to enumerate here, in all parts of the world, some finely crested, other spotted throughout; and there are four or five additional genera noted by modern Ornithologists. One of the best known species is the Shag or crested Cormorant of Britain and Europe, *Grac. cristatus*, Linn.

The next bird, and the last on our list, may be considered to belong to the *Graculidæ*, but perhaps should form a separate sub-family, consisting of one genus.

Sub-fam. PLOTINÆ.

Gen. PLOTUS, Linnæus.

Char.—Bill elongate, slender, straight, subulate, very acute, the margin obliquely toothed towards the tip; nostrils very small, basal; tail long, rounded; neck very long and slender; body and feet as in the Cormorants.

These may be said to be Cormorants with the head and neck of a Heron; the scapulars are elongate, lanceolate, and very beautifully marked, silvery and black. In their anatomy they quite resemble Cormorants.

There are four species, one American, one African, one Indian, and the fourth Australian.

1008. **Plotus melanogaster,** GMELIN.

BLYTH, Cat. 1749—JERDON, Cat. 393—PENNANT, Ind. Zool. pl. 12—SYKES, Cat. 228—*Banwa*, H.—*Goyar* Beng.—*Sili*, Sindh.—*Kallaki-pitta*, Tel.—*Chakuri* of the Southern Gonds.

THE INDIAN SNAKE BIRD.

Descr.—Forehead, nape, and neck mottled brown, each feather being dark-brown with a pale edging, the median line of the head, nape, and hind neck being darker than the rest, and the median line below paler; a minute white line from the base of the bill over the eye; the cheeks, chin, and throat white, continued in a line from below the eye down the side of the neck for nearly half its length, and gradually overcome on the sides of the fore-neck by the brown feathers which run along the sides of the neck, and form a narrow line passing up through the white to the gape; upper back gradually changing from the brown of the hind-neck into the brownish-black of the rest of the dorsal region, and on the sides spotted with white, the spots commencing at first as small oval drops, and gradually increasing in size and shape to the scapulars, which are long and lanceolate, and deep black with the central portion silvery-

white; wing-coverts black, spotted with silvery-white; tertiaries and the last secondaries also with a silvery streak on their outer webs; quills and tail deep raven-black; the feathers of the tail with a barred appearance on their outer webs, caused by a series of transverse elevated ridges which are gradually lost on the outermost feathers; lower portion of the neck, breast, and all the lower parts, glossy brownish-black.

The female has the head and neck pale whity-brown, lightest on the lower side, and albescent on the chin, face, and throat; and a fulvous patch on the sides of the neck, continued from the paler median line of the lower side of the neck, and extending to the shoulder; back browner than in the male, becoming black on the rump; wing-coverts more or less brown; otherwise as in the male.

Bill dusky above, yellowish on the sides; irides yellow; legs black. Length 32 inches; wing 14; tail 9; bill at front $3\frac{1}{2}$; tarsus $1\frac{1}{2}$; middle toe $2\frac{3}{4}$.

The young birds are coloured somewhat as the female, and the nestlings have white down, with the wings and tail blackish.

This beautiful diver is found throughout all India, Ceylon, Burmah, and Malayana. It is exceedingly numerous in some parts of the country, especially in Bengal; hundreds are often to be seen on a single jheel. They hunt singly in general, or in scattered parties, but often roost in company, both at night and in the middle of the day, when numbers may be seen perched on the trees overhanging some tank or river. They float low on the water, often with nothing, but the head and neck visible, and swim and dive with rapidity. After feeding for some time, they perch on the bough of a tree, or on a pole or stone, and spread their wings out to dry as the Cormorants do. They feed on fish, and their digestion is very rapid. They nidificate on trees, but I have not procured their eggs.

The lengthened scapular feathers are looked on as a badge of Royalty by the Khasias, and they are esteemed by all. They were the badge of one of the Bengal regiments of Irregular Cavalry

Tribe URINATORES, Divers.

Alcadæ, Vigors.

Usually three toes only, or with a small hind toe pointing forwards.

This tribe, the last of the *Natatores*, comprises two distinct families, neither of which possess representatives in India. Their young are fed by their parents in the nest for some time.

1*st.*—*Alcidæ*. Auks and Guillemots.

2*nd.*—*Spheniscidæ*. The Penguins.

Fam. ALCIDÆ.

These are sub-divided into *Alcinæ*, or Auks and Puffins, and *Uriinæ*, the Guillemots. The Auks and Puffins have a stout, highly compressed bill, often very high and sharp on the culmen, no hind toe, and the three anterior toes fully webbed. They have short wings, and in general fly badly or not at all, but swim and dive well. They nidificate on rocks, or burrow in sand, laying one (or rarely two) eggs. They are said to run or rather creep along the ground faster than would be supposed from the shortness of their legs. The sternum has the fissures reduced to foramina, and is narrow; the prolongation of the tibia observed in Grebes and Colymbidæ is not found here, for these birds chiefly use their wings for progression under water. They are all from northern latitudes, and several are found in British Seas. The great Auk, *Alca major*, L., has the shortest wings of any northern bird, and cannot fly at all. The Razor bill, *A. torda*, L., on the contrary, can fly tolerably well. The Puffins *(Fratercula)* have deep, generally brightly-coloured beaks, and some are crested *(Phaleris.)* They have no seasonal change of plumage.

The Guillemots, *Uriinæ*, have the bill more slender and like that of the *Colymbidæ*. They can fly tolerably well, and also use their wings under water. They have a double moult. They lay but one very large egg, variable in color, usually green with dark blotches. The young at first are clothed with a down resembling the summer dress of the old bird; the first plumage resembles the adult winter dress, is of remarkably delicate texture, and is replaced by the real winter plumage in a few weeks.

Fam. SPHENISCIDÆ.

Ptilopteri, Bonap.

The Penguins are peculiar to Southern Seas. They are still less capable of flying than the Auks, their wings being reduced in some cases to a kind of fin covered with small scaly feathers, and their feet are placed still further backwards; the tarsus is widened posteriorly, and they rest on it. They stand upright, and move along the ground by trailing on their bellies. They live almost entirely on the sea, only coming to the shore to breed, which they do on rocks, or in holes in the ground. They attend their young for some time after they are hatched. Among the few known species are the Patagonian Penguin, *(Aptenodytes patachonica,)* the flattened skin of which is often brought by sailors; the crested Gorfew *(Eudyptes demersa)*; and the Jackass Penguin, *(Catarractes chrysocoma).*

APPENDIX.

In this appendix I shall merely give the result of the latest observations relating to the correction of the nomenclature, and additions or erasions from the list of the Birds of India, with a very few remarks on any particular subject of interest.

Vol. I., p. 29, No. 10.—*Falco sacer.* This rare European bird, the Sakr Falcon of old writers, is brought in tolerable plenty from the Hazara country and the Alpine Punjab generally; and is much used for hawking both the Indian Honbarra bustard, and Hares, &c.

„ p. 57, No. 27.—*Aquila bifasciata* is given by Blasius and others as distinct from *A. imperialis*, and is said chiefly to inhabit Central Asia.

„ p. 59, No. 28.—The Asiatic race of *Aquila nævia* is now separated by many authors under the name of *Aquila clanga*, Pallas.

„ p. 73.—Blyth, in his List of Indian birds in the Ibis Vol. IV., gives *Limnaetus cristatellus* as found in the Himalayas, and he has marked a specimen as such in the Museum of the Asiatic Society. I have carefully examined this bird, and am decidedly of opinion that it is merely the young state of *Limnaetus Nipalensis*; and I much doubt if *cristatellus* is ever found in the Himalayan region.

„ p. 74, No. 37.—This species is considered by some to be the *Spizaetus cristatellus* of Jardine and Selby's Illustrations. *L. caligatus*, is the same as *niveus* No. 34; and Blyth's *albo-niger* appears to be the same as Gray's *Sp. borneensis*, which last name must give way.

„ p. 81, No. 41.—The irides of the adult bird are pale yellow.

p. 85.—*Aquila vulturina* is not a Sea-eagle, but, says Mr. Gurney in epist., intermediate between *audax* and *imperialis*.

p. 87, No. 44—is, according to Mr. Gurney, *Buteo cirtensis* of Levaillant, Jr., Explor. d'Algérie, said to be the northern representative of *B. tachardus*. If recognised as distinct, my specific name *rufiventer* will, I imagine, have the priority. (1842.)

p. 88, No. 45.—This Buzzard is *Buteo ferox*, Gmelin, *leucurus*, Naumann, *rufinus*, Rüppell.

Vol. I., p. 90, No. 46.—This is *Buteo hemilasius*, Schlegel.

„ p. 91, No. 47.—Buteo plumipes is quite distinct from *B. pygmæus*, Bl., (which is *Poliornis poliogenys*, T.), and will form, as Mr. Blyth tells me, a separate division, which indeed I suggested.

„ p. 98, No. 53.—This Harrier, I have every reason to believe, breeds in Northern India. I saw several in Purneah in July, some of them in a garb resembling that of the females of the other species, and shot one bird, on the 25th July, in a state of change from the female garb to the black and white ordinary plumage. This was apparently not a young bird of the year, for the tail feathers were much worn. Can this bird then have a double moult? It would appear so, unless I was mistaken in considering it not a bird of the year. If so, they have the ordinary female garb of Harriers at first, and shortly afterwards assume the particular pied livery of this species.

„ p. 123, No. 65.—This is S. OCELLATUM Lesson, the specific name *sinensis* properly applying to *Seloputo*.

„ p. 128.—BUBO MAXIMUS, of Europe, or a pale variety of that bird, occurs in the higher region of the Himalayas, but apparently along the snow line. A specimen was sent to the Museum Asiatic of the Society by Captain Smyth of Almorah. Blyth, however, informed me that Hodgson's Shikarees, when in Calcutta, recognised *Bubo maximus* as a species which they knew; so it may hereafter demand a place among the Birds of India.

„ p. 157, No. 82, bis.—**Hirundo Tytleri,** new species. Glossy black above, beneath dark, feruginous chesnut; form and size of *H. rustica*. I found this apparently new Swallow in abundance at Dacca in June. It had evidently finished breeding, for there were many young birds. It had entirely left the place in October.

„ p. 177, No. 99.—This is probably not *Cypselus apus*, but an allied species, named by Mr. Blyth (MSS.) *C. acuticanda*.—It differs by the more pointed outer tail-feathers, and deeper black colour, &c. Length 7¾ inches; extent 21; wing 6½; tail forked for 1 inch.

„ p. 231, No. 135—ALCEDO GRANDIS is, Mr. Blyth writes me, quite distinct from *A. euryzona*.

Vol. I., p. 279, No. 164, bis.—**Yungipicus gymnophthalmos,** Blyth, *P. cinereigula,* Malherbe. From Southern India and Ceylon. This is the dark race alluded to by me at the top of the page as occurring in Malabar.

„ p. 330, No. 206—I have lately procured a specimen of this rare Cuckoo at Darjeeling, where it is called, by the Lepchas, *Ding-pit-pho.*

„ p. 411, No. 266.—*Tephrodornis grisola.* This is the same as *Hyloterpe philomela,* Temminck, according to Blyth, (in epist.) and is ranked, says he, by Wallace as a *Pachycephala.* I can hardly assent to that.

p. 427, No. 278, bis.—**Dicrurus longus,** Horsfield. Resembling *D. macrocercus,* but with a much longer tail and the white rectal spot generally absent. Length of one 12½ inches; ext. 18; wing 6; tail 6; another killed in Purneah was 13 inches long; ext. 18 ½; wing 5¾; tail 7¼.

Whilst travelling through Dacca and Sylhet, I wrote to Mr. Blyth that I thought the ordinary King Crow of those districts was different from the common one. That gentleman writes me from London that *D. longus* is barely distinguishable from the common Bengal species. Now in Southern and Central India and the N. W. Provinces, specimens are never obtained with nearly such long tails as in the dimensions given above, and the rictal spot is always present. The only conclusion that I can come to is that the Eastern race is *D. longus,* and the Peninsular, *macrocercus*; and that the two races intermix in Bengal, as the Rollers are known to do. This species extends West as far at all events as Purneah.

p. 451, No. 291.—*Leucocirca fuscoventris* apud Sykes and Adams turns out to be my *pectoralis,* as was at once seen by Mr. Blyth on inspecting the specimens in the Museum of the late E. India House. It will be noticed that I had some doubt in my mind as to the Bengal bird occurring so far west. I doubt, however, that *L. pectoralis* is nearly as common as *albo-frontata,* and suspect it will chiefly be found on the higher Ghats.

p. 481, No. 323, bis.,—Erythrosterna parva. Mr. Blyth writes me that Sykes' species (Cat. 91) is true *parva,* distinct from *E. leucura.*

Vol. II., p. 1. *Timalinæ.* On more mature consideration of the extensive and varied nature of the birds of this group, I now think that they should form a distinct family, TIMALIDÆ.

„ p. 16, No. 386.—*Pyctorhis longirostris.* "This form," writes Mr. Blyth, "is allied to *Acanthoptila.*" In this I quite agree, having seen one specimen in the possession of Captain Pinwill, H. M. 27th Regt., shot in long grass in the Terai.

„ p. 29, No. 401, bis.—**Pomatorhinus Phayrei,** Blyth, must be added to the Indian Fauna, as that gentleman writes me that he has seen specimens from Nepal. It is described l. e., 7th line from the bottom.

„ p. 56.—*Artamus cucullatus* of Nicholson, which has long perplexed both Mr. Blyth and myself, and which I, in the text, likened to a species of *Sibia*, turns out, Mr. Blyth writes me, to have been founded on a bad native drawing of *Sylvia orphea !*

„ p. 78, No. 446.—*Hypsipetes Ganeesa* turns out to be the same as my *Neilgherriensis*, which last therefore must be suppressed, although kept distinct by most systematists.

„ p. 127, No. 485-6, bis.—**Pratincola rubetra** (Linnæus) *Sax. rubetroides*, Jameson, (MSS.) The Whinchat. This European bird, or a closely allied race, has been procured by Mr. W. Jameson on the Salt range of the Punjab.

„ p. 128, No. 487.—The female of *Rhodophila melanoleuca* is brown above, dirty white beneath; and undoubtedly cogeneric with *Pratincola ferrea*, No. 486.

„ p. 146, No. 508.—Blyth writes me that *Lusciola cyanura* as figured in the Fauna Japonica appears to be quite different from his *Ianthia rufilata*; yet Pallas' *cyanura* appears to me the same.

„ p. 157, No. 518.—*Arundinax olivaceus*=*Salicaria aedon*, Pallas, fid., Blyth in epist., and must therefore staud as A. AEDON.

„ p. 159, No. 520.—This species should be named the STREAKED REED WARBLER, the lesser Reed Warbler having been already applied to another species, 516.

„ p. 161.—The genus *Tribura*=Lusciniopsis.

„ p. 162, No. 525.—This, writes Blyth, is "apparently the same as my adult state of *Neornis flavolivacea.*"

„ p. 163.—The genus *Horeites* appears to have only 10 tail-feathers.

Vol. II., p. 185, No. 550.—*Burnesia lepida*, Blyth=*Malurus gracilis*, Rüppell, fid. Blyth in epist.

„ p. 190, No. 554.—*Phylloscopus tristis*, Blyth, is, writes that gentleman, *P. brevirostris*, Strickland.

„ p. 191, No. 555.—*Phylloscopus fuscatus*=*Sylvia sibirica*, Middendorf.

„ p. 197, No. 565.—Should stand as *Reguloides superciliosa*, (Gmelin).

„ Do.—No. 566, is true *Motacilla proregulus*, Pallas.

„ p. 218, No. 591.—This species, says Gould, is not true *Dukhunensis* of Sykes; and he has named and figured it as MOTACILLA PERSONATA, Birds of Asia, pt. XIII.; Sykes' M. DUKHUNENSIS, will therefore be an addditional species, 591 bis. It is said to differ in its rather large size, and to have more white on the secondaries and greater wing-coverts than *M. alba*. The geographic boundaries of this and the other allied races of Wagtail are desiderata.

„ p. 225, No. 594.—This is, writes Mr. Blyth, distinct from *Budytes citreola*, *vera*, and will stand as BUDYTES CITREOLOIDES, Hodgson.

„ p. 228, No. 596.—According to Blyth, Sykes' *Anthus agilis* is true ARBOREUS, and the common Indian race therefore will bear Hodgson's name MACULATUS.

„ p. 297, No. 662.—*Corvus tenuirostris* must be expunged, as Mr. Blyth has ascertained that it is the Malayan *corvusenca*, Horsfield, and certainly not from India.

p. 309, No. 671.—This species should stand as UROCISSA OCCIPITALIS, Blyth. It is said by Gould to differ from *sinensis* in having the tail-feathers more broadly tipped with white, and wants the white spot on the inner web, possessed by *sinensis*; the nape too is purer white. It is confined to the Himalayas from Kumaon to the eastern portion of Nepal, where it is replaced by *U. flavirostris*.

„ p. 310, No. 672.—The Western yellow-billed race is now considered by Gould to be distinct from *flavirostris* of Sikim, and has been named UROCISSA CUCULLATA by Gould, who has figured it in the birds of Asia, Pt. XIII. pl. 5. It differs from *flavirostris* in having the crown alone and not the back of the head

black, and in the legs being shorter and stouter; the tail too is more widely tipped with white, and the white is purer than in the Eastern race. It is said to occur in Kulu, and the N. W. of Kamaon; also still further west up to Cashmere.

Vol. II., p. 316, No. 676.—This is, writes Mr. Blyth, distinct from true *Dendrocitta sinensis*, and that naturalist suggests for it the name of DENDROCITTA HIMALAYANA, Blyth.

„ p. 372, No. 714.—This supposed species, *Emberiza Stracheyi*, Moore, must be suppressed, as it is simply the summer plumage of *E. cia*.

„ p. 403, No. 744.—Blyth's *Propasser frontalis*, must also be abandoned, Mr. Blyth writes me, as it is the same as P. THURA.

„ p. 422, No. 759.—Blyth writes me that this is probably AMMOMANES PALLIDA, Shrenberg.

„ p. 427, No. 761, bis.—**Melanocorypha torquata,** Blyth. This fine Lark occurs, I am informed by Dr. Jameson, in large flocks in the Punjab in the cold weather, extending into the N. W. Provinces during February and March. Many are found at this season near Saharunpore, and are killed for the table, being equally good with the Bagheyri lark.

„ p. 427.—**Melanocorypha tartarica,** (Pallas.) This bird was killed by Dr. Jameson within our limits at Gildoung, on this side of the Niti pass. He saw many in scattered flocks.

„ p. 517, No. 806.—The Kumaon species of Horned-pheasant, I find, is *Ceriornis satyra* and not *melanocephala*, which apparently does not extend farther east than Simla.

„ p. 524, No. 808.—Blyth writes me that, apparently PUCRASIA NIPALENSIS is a good species, which must therefore be added to the list of the birds of India, if not also P. CASTANEA, which probably occurs in the most western portion of the Himalayas within our limits.

„ p. 627. No. 840, bis.—**Cursorius gallicus,** Linus. The European Courier Plover. *Descr.*—Forehead and upper plumage generally pale isabelline or sandy-yellow; top of the head pale grey; a broad superciliary white band from the eye to the occiput, with a narrower black line beneath it; both widen out at the occiput, which is sub-crested, mixed black and white; quills black; tail concolorous with the upper plumage, with a

broad dark-brown terminal band, broadly tipped with white on all except the central feathers; beneath, as above but paler, and albescent towards the vent and under tail-coverts; lower wing-coverts deep brown. Bill black; legs yellowish white. Length 10 inches; wing $6\frac{1}{2}$; tail $2\frac{1}{2}$; bill at front $\frac{7}{8}$; tarsus $2\frac{1}{8}$.

This bird was found, many years ago, by Dr. W. Jameson, in various parts of the Punjab, in small flocks on bare sandy plains; and it was noticed by him in a Report on the Birds of the Punjab sent in to Government. It does not correspond precisely with the descriptions I have access to of the European bird, being altogether paler, and more albescent beneath; and if, on comparison, it should be found distinct, I would call it Cursorius Jamesoni. Four of the additions to the Indian Avi-fauna, given in this Appendix, have been collected by this gentleman alone; and he has given me much valuable information on many other rare birds.

Vol. II., p. 690.—Blyth writes me that "the common little stint of this country is **Tringa Subminuta**, Middendorf," but probably *T. minuta* also occurs in Western India.

„ p. 722, No. 908.—The measurements of *Porzana akool* are by some mistake very erroneous. The length should be 10 inches; wing 5; tail 2; bill at front $1\frac{1}{8}$; tarsus 2; mid-toe 2.

„ p. 775, No. 944.—Mr. Blyth writes me that *Phœnicopterus minor*, from Africa, appears exceedingly like the lesser Indian race and may yet require to be added to the Indian Avi-Fauna.

„ p. 837, No. 984, bis.—**Hydrochelidon nigra** will require to be added to the Birds of India, Mr. Blyth having seen Indian examples collected by Dr. L. Stewart.

Thus twelve species are added in this Appendix, exclusive of *Bubo maximus*, *Tringa minuta*, *vera*, and *Phœnicopterus minor*, which possibly may also require to be added, whilst only four are suppressed, making the total number of species described in the Birds of India 1016. Of these I consider as somewhat doubtful the following fifteen species:—

No. 88, Cotyle sub-soccata.

„ 105, Otothrix Hodgsonii.

„ 182, Brachypternus dilutus.

„ 262, Lanius arenarius.

No. 298, Alseonax terricolor.
„ 311, Muscicapula æstigma.
„ 495, Ruticilla phœnicura (as distinct from *phœnicuroides*).
„ 533, Prinia Adamsi.
„ 537, „ cinereocapilla.
„ 548, Suya faliginosa.
„ 557, Phylloscopus trochilus (as Indian).
„ 658, Corvus tibetanus.
„ 675, Dendrocitta pallida.
„ 764, Otocoris longirostris.
„ 906, Gallinula Burnesii.

THE END.

Printed at the Military Orphan Press, 6, Bankshall Street.

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INDEX

OF

ENGLISH NAMES OF BIRDS

IN

JERDON'S BIRDS OF INDIA.

Bombay:
PRINTED AT THE
EDUCATION SOCIETY'S PRESS, BYCULLA.
1870.

INTRODUCTION.

The following Index has been prepared for the convenience of sportsmen and amateur naturalists who may be unfamiliar with the Latin terminology of the published Index in Vol. III. of Jerdon's Birds of India, and in consequence find it difficult to make much use of that valuable book. Scientific naturalists may perhaps be satisfied with the Latin Index, but for many European sportsmen it is insufficient, and to the majority of the educated natives of India it is practically useless. In case any into whose hands this Index comes think the few hints I have ventured to prefix contain nothing but what is so generally known as not to be worth formally stating, I may add that I have written them chiefly in hopes of promoting in some slight degree the study of Natural History by educated natives of this country, who are, as a rule, singularly deficient in the faculty of observation. There are hundreds of Hindus familiar with the political histories of Greece and Rome, but absolutely ignorant of the most obvious facts in the natural history of their own country. Very many are entirely contented in their ignorance; with them I have nothing to do. But to those who have begun to take an interest in ornithology, and desire to know something of the birds which they see and hear every day; I hope not only this English Index, but even the hints on the use of it, may prove of some slight service.

R. G. OXENHAM.

Elphinstone College, August 1870.

HINTS.

A strange bird is shot or seen, and we wish to find what it may be. The difficulty of doing this is not, we will suppose, that our bird is not described in Jerdon, but that we do not know where to look for Jerdon's account of it. This difficulty will not be insuperable if our search is conducted on intelligent principles. This can only be done by previously obtaining some knowledge of the main divisions into which naturalists have distributed birds. These divisions are the

"Genera" of some writers, the "Orders" of Jerdon who has classified birds in the following six orders:—

I.—Raptores, birds of prey.
II.—Insessores, perching birds.
III.—Gemitores, pigeons.
IV.—Rasores, game birds.
V.—Grallatores, wading birds.
VI.—Natatores, swimming birds.

As nearly three-quarters of all known birds belong to Order II., it will be convenient to consider the other five orders first, as when they are familiar any strange bird may be at once recognized as belonging, or not belonging, to one of these five orders; and if not so belonging, that becomes certain which was before probable, and the stranger must be looked for in Order II., all other orders being neglected.

How, then, can we discover whether a bird belongs to any given order?

First, examine the legs and feet.

If the feet are webbed and the legs set far back we may expect the plumage to be thick and close, and consider the bird a swimmer in Order VI.

If the legs are very long, and bare above the knee, we shall probably be right in considering the bird a wader in Order V. The Flamingo (Order VI.) is the only bird not belonging to this Order V. which is likely to be assigned to it.

If the legs and feet are stout, the hind toe small and raised, and the shank spurred, the bird is probably one of the Rasores, Order IV.

If the legs are feathered to the joint, toes moderately long, and feeble, hind toe on the same plane as the anterior toes, the bird is probably a pigeon, Order III.

If the legs are strong and muscular, toes rough beneath, claws sharp and curved, the bird belongs to Order I.

Common types of the orders:—

I.—Kites and Hawks.
III.—Pigeons.
IV.—Partridges, Quails, and Domestic Fowls.
V.—Herons and Plovers.
VI.—Ducks and Coots.

These types are familiar birds, and the sportsman or amateur naturalist will easily detect a bird belonging to any of these five orders. Very little practice and observation will enable him to decide at once whether a bird can be assigned to any one of them. But if it appears that a bird under examination does not belong to any of these clearly defined orders, but must belong to Order II., the difficulty of finding it will still be considerable, unless some of the more characteristic tribes and families contained under this great order are recognized and remembered.

The following are among the best known and conspicuous of the Insessores :—

Fam.—Hirundinidæ ; *i.e.* Swallows and Swifts.
Tribe—Scansores : *i.e.* Woodpeckers, Parrots, &c.
Fam.—Corvidæ ; *i e.* Crows, Starlings, &c.
Fam.—Halcyonidæ ; *i.e.* Kingfishers.

To apply these hints, take the case of a bird familiar to every resident in India, the name of which is, we will suppose, not known to us. We find that this bird does not belong to any of the five clearly distinguished orders, for it fails to answer to the description of any one of them. We also see that it cannot be one of the Hirundinidæ, Scansores, or Halcyonidæ, but we think it may possibly be assigned to the Corvidæ. Further inspection shows that our bird is not one of the Corvidæ, for the claws are not strong and curved enough, and the feet altogether are too feeble, the bill is not conical enough, and our whole bird on closer inspection seems less strongly built than the Crows. We abandon the Corvidæ, and, having noticed the gape of our bird to be very wide, we try whether it can be found under the Fissirostres, and turning to Vol. I., page 153, find the general description of this tribe in accordance with what we see in our bird ; moreover, the remark "usually take their prey on the wing" reminds us that we were attracted to our bird by its sudden swoop upon an insect and immediate return to its perch. Having then pretty well settled that the bird is one of the Fissirostres, we find 8 families included in this tribe; 2 families we reject, as our bird is neither a Kingfisher nor a Swallow. Turning to Caprimulgidæ (I. 187), we find the characteristics do not apply to our bird, which has neither the dingy plumage nor nocturnal habits of this family. We soon come to the Coraciadæ, and find the description singularly applicable, and discover that our bird is Coracias Indica, the common Indian Roller, often known to Europeans as the Indian Jay.

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00039891

Digitized with financial assistance from the
Government of Maharashtra
on 02 July, 2018